# Workshop Manual
## OCTAVIA II 2004 ➢
## Gearbox 02Q

Edition 02.04

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# List of Workshop Manual Repair Groups

## Repair Group

00 - Technical data

30 - Clutch

34 - Control, housing

35 - Wheels, shafts

39 - Final drive, differential gear

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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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# 00 – Technical data

## 1 Identification of the gearbox

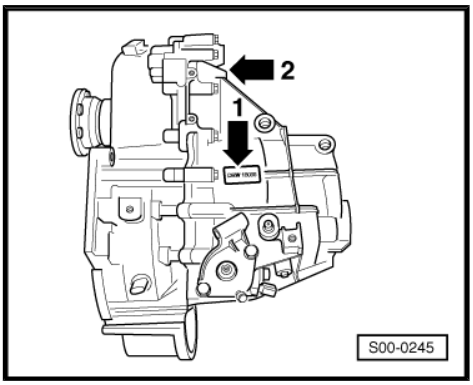
Assignment ⇒ page 4 .

### 1.1 Location on the gearbox

**Front-wheel-drive**

Identification characters and production date -arrow 1-

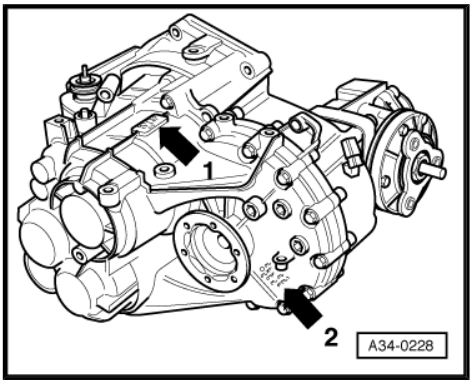
Identification of gearbox 02Q -arrow 2-.



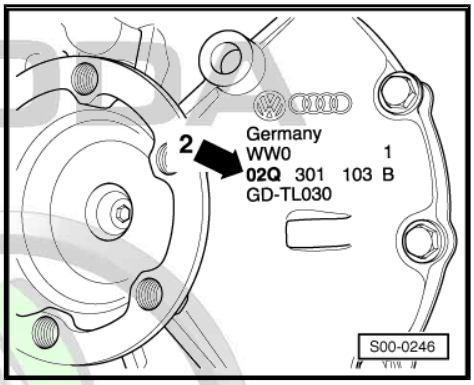

**Four-wheel drive**

Identification characters and production date -arrow 1-

Identification of gearbox 02Q -arrow 2-.




**Gearbox 02Q -arrow 2-**

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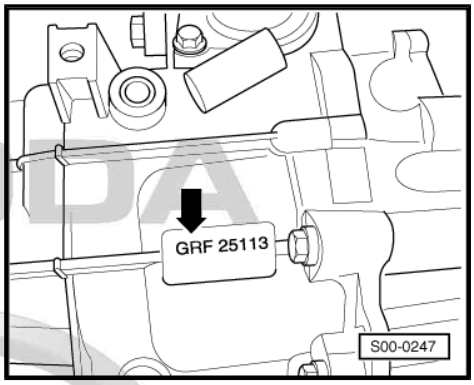
**Identification characters and production date of the gearbox -arrow-**




| Example: | GRF | 25 | 11 | 3 |
|---|---|---|---|---|
| | I | I | I | I |
| | I | I | I | I |
| | Identification characters | Day | Month | Manufacturing year 2003 |

Additional data gives information about the manufacturing factory.

**Note**

*The gearbox identification characters also appear on the vehicle data stickers.*

## 1.2 Identification of rear final drive

The final drives 02D, 0AV and OBR are assigned to the 6 speed gearbox 02Q for four-wheel drive.

**Note**

- *The "Haldex coupling" is located in the rear final drive.*
- *The final drive and the "Haldex coupling" have separate oil circulation systems.*
- *The final drives "02D/0AV" are fitted with the "Haldex coupling of the 2nd generation".*
- *The final drive "0BR" is fitted with the "Haldex coupling of the 4th generation".*
- *The rear final drives "02D/0AV" and "0BR" have different "Haldex couplings" as well as different oils for the Haldex coupling.*
- *Both oils for the Haldex coupling must neither be mixed up nor mixed, assignment ⇒ Electronic catalogue of original parts .*

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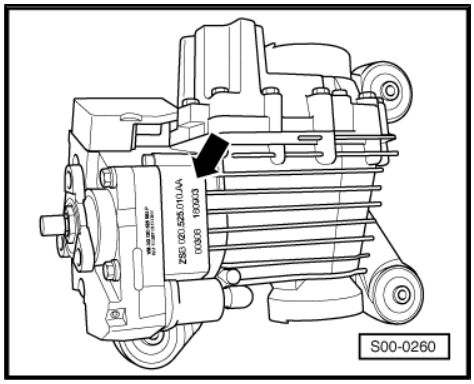
Assignment ⇒ page 4 .

**Location on the final drive**

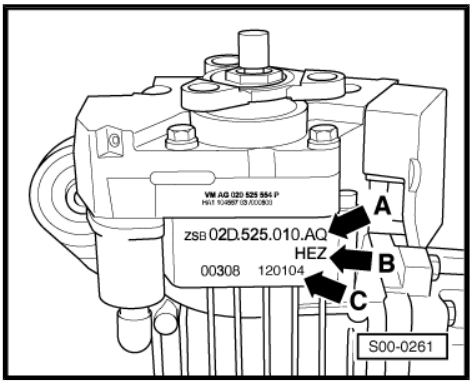
Part number, identification characters of the final drive, production date -arrow-.



**Rear final drive 02D**

**-Arrow A- Part number of rear final drive**

**-Arrow B- Identification characters rear final drive**




**Note**

*The identification characters do not appear on all final drives. If they do not appear, assignment ⇒ Electronic Catalogue of Original Parts .*

**-Arrow C- Production date**

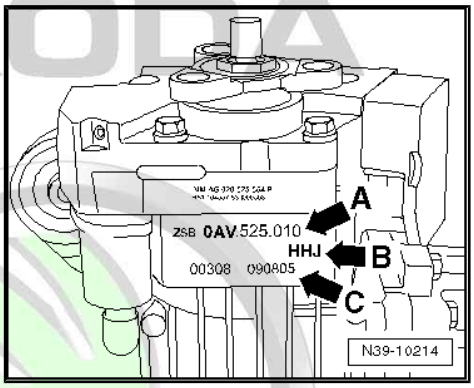
| Example: | HEZ | 12 | 01 | 04 |
|---|---|---|---|---|
| | I | I | I | I |
| | Identification characters | Day | Month | Manufacturing year (2004) |

Additional data gives information about the manufacturing factory.

**Rear final drive 0AV**

**-Arrow A- Part number of rear final drive**

**-Arrow B- Identification characters rear final drive**




**Note**

*The identification characters do not appear on all final drives. If they do not appear, assignment ⇒ Electronic Catalogue of Original Parts .*

**-Arrow C- Production date**

| Example: | HHJ | 09 | 08 | 05 |
|---|---|---|---|---|
| | I | I | I | I |
| | Identification characters | Day | Month | Manufacturing year (2005) |

Additional data gives information about the manufacturing factory.

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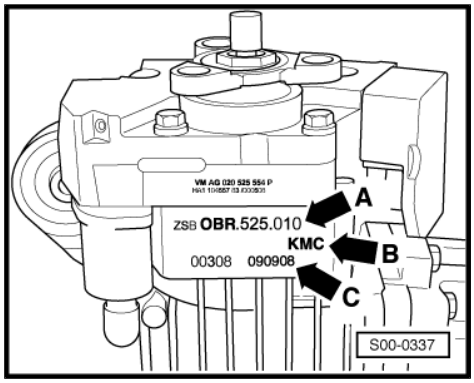
**Rear final drive 0BR**

**-Arrow A- Part number of rear final drive**

**-Arrow B- Identification characters rear final drive**




**Note**

*The identification characters do not appear on all final drives. If they do not appear, assignment ⇒ Electronic Catalogue of Original Parts .*

**-Arrow C- Production date**

| Example: | KMC | 09 | 09 | 08 |
|---|---|---|---|---|
| | I | I | I | I |
| | Identification characters | Day | Month | Manufacturing year (2008) |

Additional data gives information about the manufacturing factory.

## 1.3 Identification characters, aggregate assignment, ratios, capacities

| Manual gearbox | | 6 speed 02Q front-wheel-drive | |
|---|---|---|---|
| Identification characters | | GRF | HDV |
| Manufactured | from<br>through | 05.04<br>11.04 | 11.04<br>03.06 |
| Assignment: | Engine | 2.0 ltr./103 kW TDI PD<br>2.0 ltr./100 kW TDI PD | 2.0 ltr./103 kW TDI PD<br>2.0 ltr./100 kW TDI PD |
| Ratio: | Final drive for 1st gear through 4th gear | 69 : 20 = 3,450 | 69 : 20 = 3,450 |
| | Final drive for 5th gear through 6th gear | 69 : 25 = 2,760 | 69 : 25 = 2,760 |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 45 : 34 = 1,324 | 45 : 34 = 1,324 |
| | 4th gear | 42 : 43 = 0,977 | 42 : 43 = 0,977 |
| | 5th gear | 39 : 40 = 0,975 | 39 : 40 = 0,975 |
| | 6th gear | 35 : 43 = 0,814 | 35 : 43 = 0,814 |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | 36 : 13 x 23 : 14 = 4.549 |
| Filling capacity | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |

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| Manual gearbox | | 6 speed 02Q front-wheel-drive | |
|---|---|---|---|
| Identification characters | | GVT | JLU |
| Manufactured | from<br>through | 10.05<br>03.06 | 04.06<br>05.07 |
| Assignment: | Engine | 2.0 ltr./147 kW TFSI | 2.0 ltr./103 kW TDI PD |

| Manual gearbox | | 6 speed 02Q front-wheel-drive | |
|---|---|---|---|
| | | | 2.0 ltr./100 kW TDI PD |
| Ratio: | Final drive for 1st gear through 4th gear | 71 : 18 = 3,944 | 69 : 20 = 3,450 |
| | Final drive for 5th gear through 6th gear | 71 : 23 = 3,087 | 69 : 25 = 2,760 |
| $Z_2 : Z_1$ | 1st gear | 47 : 14 = 3,357 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 47 : 32 = 1,469 | 45 : 34 = 1,324 |
| | 4th gear | 45 : 41 = 1,098 | 42 : 43 = 0,977 |
| | 5th gear | 41 : 37 = 1,108 | 39 : 40 = 0,975 |
| | 6th gear | 38 : 41 = 0,927 | 35 : 43 = 0,814 |
| | Reverse gear | 34 : 14 x 23 : 14 = 3.990 | 36 : 13 x 23 : 14 = 4.549 |
| Filling capacity | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |

| Manual gearbox | | 6 speed 02Q front-wheel-drive | |
|---|---|---|---|
| Identification characters | | JLW | JMA |
| Manufac-tured | from | 04.06 | 07.06 |
| | through | 05.07 | 05.07 |
| Assign-ment: | Engine | 2.0 ltr./147 kW TFSI | 2.0 ltr./125 kW TDI PD |
| Ratio: | Final drive for 1st gear through 4th gear | 71 : 18 = 3,944 | 70 : 19 = 3,684 |
| | Final drive for 5th gear through 6th gear | 71 : 23 = 3,087 | 70 : 24 = 2,917 |
| $Z_2 : Z_1$ | 1st gear | 47 : 14 = 3,357 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 47 : 32 = 1,469 | 45 : 34 = 1,324 |
| | 4th gear | 45 : 41 = 1,098 | 34 : 37= 0,919 |
| | 5th gear | 41 : 37 = 1,108 | 37 : 41= 0,902 |
| | 6th gear | 38 : 41 = 0,927 | 28 : 37= 0,757 |
| | Reverse gear | 34 : 14 x 23 : 14 = 3.990 | 36 : 13 x 23 : 14 = 4.549 |
| Filling capacity | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |

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| Manual gearbox | 6 speed 02Q front-wheel-drive | |
|---|---|---|
| Identification characters | KDN | KDQ |

| Manual gearbox | | 6 speed 02Q front-wheel-drive | |
|---|---|---|---|
| Manufac-tured | from | 06.07 | 06.07 |
| | through | 12.07 | 12.07 |
| Assign-ment: | Engine | 2.0 ltr./103 kW TDI PD<br>2.0 ltr./100 kW TDI PD | 2.0 ltr./147 kW TFSI |
| Ratio: | Final drive for 1st gear through 4th gear | 69 : 20 = 3,450 | 71 : 18 = 3,944 |
| | Final drive for 5th gear through 6th gear | 69 : 25 = 2,760 | 71 : 23 = 3,087 |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | 47 : 14 = 3,357 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 45 : 34 = 1,324 | 47 : 32 = 1,469 |
| | 4th gear | 42 : 43 = 0,977 | 45 : 41 = 1,098 |
| | 5th gear | 39 : 40 = 0,975 | 41 : 37 = 1,108 |
| | 6th gear | 35 : 43 = 0,814 | 38 : 41 = 0,927 |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | 34 : 14 x 23 : 14 = 3.990 |
| Filling capacity | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |

| Manual gearbox | | 6 speed 02Q front-wheel-drive | |
|---|---|---|---|
| Identification characters | | KDS | KNS |
| Manufac-tured | from | 06.07 | 12.07 |
| | through | 12.07 | 05.09 |
| Assign-ment: | Engine | 2.0 ltr./125 kW TDI PD | 2.0 ltr./103 kW TDI PD<br>2.0 ltr./100 kW TDI PD |
| Ratio: | Final drive for 1st gear through 4th gear | 70 : 19 = 3,684 | 69 : 20 = 3,450 |
| | Final drive for 5th gear through 6th gear | 70 : 24 = 2,917 | 69 : 25 = 2,760 |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 45 : 34 = 1,324 | 45 : 34 = 1,324 |
| | 4th gear | 34 : 37= 0,919 | 42 : 43 = 0,977 |
| | 5th gear | 37 : 41= 0,902 | 39 : 40 = 0,975 |
| | 6th gear | 28 : 37= 0,757 | 35 : 43 = 0,814 |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | 36 : 13 x 23 : 14 = 4.549 |
| Filling capacity | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |

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| Manual gearbox | | 6 speed 02Q front-wheel-drive | |
|---|---|---|---|
| Identification characters | | KNU | KNY |
| Manufac-tured | from<br>through | 12.07<br>05.09 | 12.07<br>05.09 |
| Assign-ment: | Engine | 2.0 ltr./147 kW TFSI | 2.0 ltr./125 kW TDI PD |
| Ratio: | Final drive for 1st gear through 4th gear | 71 : 18 = 3,944 | 70 : 19 = 3,684 |
| | Final drive for 5th gear through 6th gear | 71 : 23 = 3,087 | 70 : 24 = 2,917 |
| $Z_2 : Z_1$ | 1st gear | 47 : 14 = 3,357 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 47 : 32 = 1,469 | 45 : 34 = 1,324 |
| | 4th gear | 45 : 41 = 1,098 | 34 : 37= 0,919 |
| | 5th gear | 41 : 37 = 1,108 | 37 : 41= 0,902 |
| | 6th gear | 38 : 41 = 0,927 | 28 : 37= 0,757 |
| | Reverse gear | 34 : 14 x 23 : 14 = 3.990 | 36 : 13 x 23 : 14 = 4.549 |
| Filling capacity | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |

| Manual gearbox | | 6 speed 02Q front-wheel-drive | |
|---|---|---|---|
| Identification characters | | KXX | KXZ |
| Manufac-tured | from<br>through | 06.09<br>05.10 | 06.09 |
| Assign-ment: | Engine | 2.0 ltr./103 kW TDI PD<br>2.0 ltr./100 kW TDI PD | 2.0 ltr./125 kW TDI CR |
| Ratio: | Final drive for 1st gear through 4th gear | 69 : 20 = 3,450 | 70 : 19 = 3,684 |
| | Final drive for 5th gear through 6th gear | 69 : 25 = 2,760 | 70 : 24 = 2,917 |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 45 : 34 = 1,324 | 45 : 34 = 1,324 |
| | 4th gear | 42 : 43 = 0,977 | 34 : 37= 0,919 |
| | 5th gear | 39 : 40 = 0,975 | 37 : 41= 0,902 |
| | 6th gear | 35 : 43 = 0,814 | 28 : 37= 0,757 |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | 36 : 13 x 23 : 14 = 4.549 |
| Filling capacity | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |

As of 06.09, the bearing of the reverse gear shift fork is modified.

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| Manual gearbox | | 6 speed 02Q front-wheel-drive | |
|---|---|---|---|
| Identification characters | | KZS | LHD |
| Manufac-tured | from | 06.09 | 06.10 |
| | through | | |
| Assign-ment: | Engine | 2.0 ltr./147 kW TFSI | 2.0 ltr./103 kW TDI CR |
| Ratio: | Final drive for 1st gear through 4th gear | 71 : 18 = 3,944 | 69 : 20 = 3,450 |
| | Final drive for 5th gear through 6th gear | 71 : 23 = 3,087 | 69 : 25 = 2,760 |
| $Z_2 : Z_1$ | 1st gear | 47 : 14 = 3,357 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 47 : 24 = 1,958 |
| | 3rd gear | 47 : 32 = 1,469 | 44 : 35 = 1,257 |
| | 4th gear | 45 : 41 = 1,098 | 40 : 46 = 0,870 |
| | 5th gear | 41 : 37 = 1,108 | 36 : 42 = 0,857 |
| | 6th gear | 38 : 41 = 0,927 | 33 : 46 = 0,717 |
| | Reverse gear | 34 : 14 x 23 : 14 = 3.990 | 36 : 13 x 23 : 14 = 4.549 |
| Filling capacity | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |

As of 06.09, the bearing of the reverse gear shift fork is modified.

| Manual gearbox | | 6 speed 02Q four-wheel drive | |
|---|---|---|---|
| Identification characters | | FWZ | JLS |
| Manufac-tured | from | 11.04 | 04.06 |
| | through | 03.06 | 05.07 |
| Assignment: | Engine | 1.9 ltr./77 kW TDI PD | 1.9 ltr./77 kW TDI PD |
| Ratio: | Final drive for 1st gear through 4th gear | 72 : 17 = 4,235 | 72 : 17 = 4,235 |
| | Final drive for 5th gear through 6th gear | 72 : 22 = 3,273 | 72 : 22 = 3,273 |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 45 : 34 = 1,324 | 45 : 34 = 1,324 |
| | 4th gear | 41 : 45 = 0,911 | 41 : 45 = 0,911 |
| | 5th gear | 37 : 41 = 0,902 | 37 : 41 = 0,902 |
| | 6th gear | 34 : 45 = 0,756 | 34 : 45 = 0,756 |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | 36 : 13 x 23 : 14 = 4.549 |
| Capacity manual gearbox | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Capacity angle gearbox | | 0,9 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |

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| Manual gearbox | 6 speed 02Q four-wheel drive | |
|---|---|---|
| Drive shaft flange ∅ | 107 mm | |
| Assignment rear final drive identification characters | HEY, HHK, HVZ | HVZ |

| Manual gearbox | | 6 speed 02Q four-wheel drive | |
|---|---|---|---|
| Identification characters | | JLR | KDX |
| Manufactured | from<br>through | 07.06<br>05.07 | 06.07<br>12.07 |
| Assignment: | Engine | 2.0 ltr./103 kW TDI PD | 1.9 ltr./77 kW TDI PD |
| Ratio: | Final drive for 1st gear through 4th gear | 62 : 16 = 3,875 | 72 : 17 = 4,235 |
| | Final drive for 5th gear through 6th gear | 62 : 20 = 3,100 | 72 : 22 = 3,273 |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 45 : 34 = 1,324 | 45 : 34 = 1,324 |
| | 4th gear | 41 : 45 = 0,911 | 41 : 45 = 0,911 |
| | 5th gear | 37 : 41 = 0,902 | 37 : 41 = 0,902 |
| | 6th gear | 34 : 45 = 0,756 | 34 : 45 = 0,756 |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | 36 : 13 x 23 : 14 = 4.549 |
| Capacity manual gearbox | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Filling capacity - angle gearbox | | 0,9 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |
| Assignment, identification characters rear final drive | | HVZ | JYP |

| Manual gearbox | | 6 speed 02Q four-wheel drive | |
|---|---|---|---|
| Identification characters | | KDL | KNP |
| Manufactured | from<br>through | 06.07<br>12.07 | 12.07<br>05.09 |
| Assignment: | Engine | 2.0 ltr./103 kW TDI PD | |
| Ratio: | Final drive for 1st gear through 4th gear | 62 : 16 = 3,875 | |
| | Final drive for 5th gear through 6th gear | 62 : 20 = 3,100 | |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | |
| | 2nd gear | 48 : 23 = 2,087 | |
| | 3rd gear | 45 : 34 = 1,324 | |
| | 4th gear | 41 : 45 = 0,911 | |
| | 5th gear | 37 : 41 = 0,902 | |
| | 6th gear | 34 : 45 = 0,756 | |

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| Manual gearbox | 6 speed 02Q four-wheel drive | |
|---|---|---|
| Reverse gear | 36 : 13 x 23 : 14 = 4.549 | |
| Capacity manual gearbox | 2.3 litres | |
| Specification | ⇒ Electronic Catalogue of Original Parts | |
| Filling capacity - angle gearbox | 0,9 litres | |
| Specification | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | hydraulic | |
| Clutch plate ∅ | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | 107 mm | |
| Assignment, identification characters rear final drive | JYP | KJT |

| Manual gearbox | | 6 speed 02Q four-wheel drive | |
|---|---|---|---|
| Identification characters | | KNQ | KSC |
| Manufactured | from | 12.07 | 11.08 |
| | through | 05.09 | 05.09 |
| Assignment: | Engine | 1.9 ltr./77 kW TDI PD | 1.8 ltr./118 kW TFSI |
| Ratio: | Final drive for 1st gear through 4th gear | 72 : 17 = 4,235 | 71 : 18 = 3,944 |
| | Final drive for 5th gear through 6th gear | 72 : 22 = 3,273 | 71 : 23 = 3,087 |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 45 : 34 = 1,324 | 47 : 32 = 1,469 |
| | 4th gear | 41 : 45 = 0,911 | 45 : 41 = 1,098 |
| | 5th gear | 37 : 41 = 0,902 | 41 : 37 = 1,109 |
| | 6th gear | 34 : 45 = 0,756 | 38 : 41 = 0,927 |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | 36 : 13 x 23 : 14 = 4.549 |
| Capacity manual gearbox | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Filling capacity - angle gearbox | | 0,9 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |
| Assignment, identification characters rear final drive | | KJT | KMC |

| Manual gearbox | | 6 speed 02Q four-wheel drive | |
|---|---|---|---|
| Identification characters | | KXU | KXV |
| Manufactured | from | 06.09 | 06.09 |
| | through | 05.10 | |
| Assignment: | Engine | 2.0 ltr./103 kW TDI PD | 1.9 ltr./77 kW TDI PD |
| Ratio: | Final drive for 1st gear through 4th gear | 62 : 16 = 3,875 | 72 : 17 = 4,235 |

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| Manual gearbox | | 6 speed 02Q four-wheel drive | |
|---|---|---|---|
| $Z_2 : Z_1$ | Final drive for 5th gear through 6th gear | 62 : 20 = 3,100 | 72 : 22 = 3,273 |
| | 1st gear | 49 : 13 = 3,769 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 48 : 23 = 2,087 |
| | 3rd gear | 45 : 34 = 1,324 | 45 : 34 = 1,324 |
| | 4th gear | 41 : 45 = 0,911 | 41 : 45 = 0,911 |
| | 5th gear | 37 : 41 = 0,902 | 37 : 41 = 0,902 |
| | 6th gear | 34 : 45 = 0,756 | 34 : 45 = 0,756 |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | 36 : 13 x 23 : 14 = 4.549 |
| Capacity manual gearbox | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Filling capacity - angle gearbox | | 0,9 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |
| Assignment, identification characters rear final drive | | KMC, MMK | |

As of 06.09, the bearing of the reverse gear shift fork is modified.

| Manual gearbox | | 6 speed 02Q four-wheel drive | |
|---|---|---|---|
| Identification characters | | LHC | LNN |
| Manufactured | from | 06.09 | 11.09 |
| | through | | |
| Assignment: | Engine | 1.8 ltr./118 kW TFSI<br>1.8 ltr./112 kW TFSI | 1.6 ltr./77 kW TDI CR |
| Ratio: | Final drive for 1st gear through 4th gear | 71 : 18 = 3,944 | 72 : 17 = 4,235 |
| | Final drive for 5th gear through 6th gear | 71 : 23 = 3,087 | 72 : 22 = 3,273 |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | 49 : 13 = 3,769 |
| | 2nd gear | 48 : 23 = 2,087 | 47 : 24 = 1,958 |
| | 3rd gear | 47 : 32 = 1,469 | 44 : 35 = 1,257 |
| | 4th gear | 45 : 41 = 1,098 | 40 : 46 = 0,869 |
| | 5th gear | 41 : 37 = 1,109 | 36 : 42 = 0,857 |
| | 6th gear | 38 : 41 = 0,927 | 33 : 46 = 0,717 |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | 36 : 13 x 23 : 14 = 4.549 |
| Capacity manual gearbox | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Filling capacity - angle gearbox | | 0,9 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |

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| Manual gearbox | 6 speed 02Q four-wheel drive |
|---|---|
| Assignment, identification characters rear final drive | KMC, MMK |

As of 06.09, the bearing of the reverse gear shift fork is modified.

| Manual gearbox | | 6 speed 02Q four-wheel drive | |
|---|---|---|---|
| Identification characters | | LNM | |
| Manufactured | from | 06.10 | |
| | through | | |
| Assignment: | Engine | 2.0 ltr./103 kW TDI CR | |
| Ratio: | Final drive for 1st gear through 4th gear | 69 : 16 = 3,875 | |
| | Final drive for 5th gear through 6th gear | 69 : 20 = 3,1 | |
| $Z_2 : Z_1$ | 1st gear | 49 : 13 = 3,769 | |
| | 2nd gear | 47 : 24 = 1,958 | |
| | 3rd gear | 44 : 35 = 1,257 | |
| | 4th gear | 40 : 46 = 0,870 | |
| | 5th gear | 36 : 42 = 0,857 | |
| | 6th gear | 33 : 46 = 0,717 | |
| | Reverse gear | 36 : 13 x 23 : 14 = 4.549 | |
| Capacity manual gearbox | | 2.3 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Filling capacity - angle gearbox | | 0,9 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Clutch control | | hydraulic | |
| Clutch plate ∅ | | ⇒ Electronic Catalogue of Original Parts | |
| Drive shaft flange ∅ | | 107 mm | |
| Assignment, identification characters rear final drive | | MMK | |

As of 06.09, the bearing of the reverse gear shift fork is modified.

| Rear final drive | | 02D | 0AV |
|---|---|---|---|
| Identification characters | | HEY | HHK |
| Manufactured | from | 11.04 | 12.04 |
| | to | 11.04 | 11.05 |
| Assignment | Engine | 1.9 ltr./77 kW TDI PD | 1.9 ltr./77 kW TDI PD |
| Ratio | $Z_2 : Z_1$ | 27 : 17 = 1,588 | |
| Capacity final drive | | 0,925 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Capacity Haldex coupling | | 0,850 litres | |
| Changing capacity Haldex coupling | | 0,720 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |

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| Rear final drive | 02D | 0AV |
|---|---|---|
| Change interval | ⇒ Maintenance ; Octavia II | |
| Drive shaft flange ∅ | 100 mm | |
| Assignment, identification characters gearbox | FWZ | FWZ |

**Note**

- *The rear final drives "02D/0AV" and "0BR" have different "Haldex couplings" as well as different oils for the Haldex coupling.*
- *Both oils for the Haldex coupling must neither be mixed up nor mixed, assignment ⇒ Electronic catalogue of original parts .*

| Rear final drive | | 0AV | |
|---|---|---|---|
| Identification characters | | HVZ | JYP |
| Manufactured | from | 12.05 | 06.07 |
| | to | 05.07 | 12.07 |
| Assignment | Engine | 1.9 ltr./77 kW TDI PD<br>2.0 ltr./103 kW TDI PD | 1.9 ltr./77 kW TDI PD<br>2.0 ltr./103 kW TDI PD |
| Ratio | $Z_2 : Z_1$ | 27 : 17 = 1,588 | |
| Capacity final drive | | 0,925 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Capacity Haldex coupling | | 0,850 litres | |
| Changing capacity Haldex coupling | | 0,720 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Change interval | | ⇒ Maintenance ; Octavia II | |
| Drive shaft flange ∅ | | 100 mm | |
| Assignment, identification characters gearbox | | FWZ, JLS, JLR | KDL, KDX |

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**Note**

- *The rear final drives "02D/0AV" and "0BR" have different "Haldex couplings" as well as different oils for the Haldex coupling.*
- *Both oils for the Haldex coupling must neither be mixed up nor mixed, assignment ⇒ Electronic catalogue of original parts .*

| Rear final drive | | 0AV | 0BR |
|---|---|---|---|
| Identification characters | | KJT | KMC |
| Manufactured | from | 12.07 | 06.08 |
| | to | 05.08 | 11.09 |
| Assignment | Engine | 1.9 ltr./77 kW TDI PD<br>2.0 ltr./103 kW TDI PD | |
| Ratio | $Z_2 : Z_1$ | 27 : 17 = 1,588 | |
| Capacity final drive | | 0,925 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Capacity Haldex coupling | | 0,850 litres | |

| Rear final drive | 0AV | 0BR |
|---|---|---|
| Changing capacity Haldex coupling | 0,720 litres | |
| Specification | ⇒ Electronic Catalogue of Original Parts | |
| Change interval | ⇒ Maintenance ; Octavia II | |
| Drive shaft flange ∅ | 100 mm | |
| Assignment, identification characters gearbox | KNP, KNQ | KNP, KNQ, KXV, KXU |

**Note**

- *The rear final drives "02D/0AV" and "0BR" have different "Haldex couplings" as well as different oils for the Haldex coupling.*
- *Both oils for the Haldex coupling must neither be mixed up nor mixed, assignment ⇒ Electronic catalogue of original parts .*

| Rear final drive | | 0BR | |
|---|---|---|---|
| Identification characters | | KMC | KMC |
| Manufactured | from | 11.08 | 07.09 |
| | to | 11.09 | 11.09 |
| Assignment | Engine | 1.8 ltr./118 kW TFSI<br>1.8 ltr./112 kW TFSI | 1.6 ltr./77 kW TDI CR |
| Ratio | $Z_2 : Z_1$ | 27 : 17 = 1,588 | |
| Capacity final drive | | 0,925 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Capacity Haldex coupling | | 0,850 litres | |
| Changing capacity Haldex coupling | | 0,720 litres | |
| Specification | | ⇒ Electronic Catalogue of Original Parts | |
| Change interval | | ⇒ Maintenance ; Octavia II | |
| Drive shaft flange ∅ | | 100 mm | |
| Assignment, identification characters gearbox | | KSC, LHC | LNN |

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**Note**

- *The rear final drives "02D/0AV" and "0BR" have different "Haldex couplings" as well as different oils for the Haldex coupling.*
- *Both oils for the Haldex coupling must neither be mixed up nor mixed, assignment ⇒ Electronic catalogue of original parts .*

| Rear final drive | | 0BR | |
|---|---|---|---|
| Identification characters | | MMK | MMK |
| Manufactured | from | 12.09 | 12.09 |
| | to | | |
| Assignment | Engine | 1.8 ltr./118 kW TFSI<br>1.8 ltr./112 kW TFSI | 1.6 ltr./77 kW TDI CR<br>1.9 ltr./77 kW TDI PD<br>2.0 ltr./103 kW TDI PD<br>2.0 ltr./103 kW TDI CR |

| Rear final drive | 0BR | |
|---|---|---|
| Ratio $Z_2 : Z_1$ | 27 : 17 = 1,588 | |
| Capacity final drive | 0,925 litres | |
| Specification | ⇒ Electronic Catalogue of Original Parts | |
| Capacity Haldex coupling | 0,850 litres | |
| Changing capacity Haldex coupling | 0,720 litres | |
| Specification | ⇒ Electronic Catalogue of Original Parts | |
| Change interval | ⇒ Maintenance ; Octavia II | |
| Drive shaft flange ∅ | 100 mm | |
| Assignment, identification characters gearbox | LHC | LNN, KXV, KXU, LNM |

**Note**

- *The rear final drives "02D/0AV" and "0BR" have different "Haldex couplings" as well as different oils for the Haldex coupling.*
- *Both oils for the Haldex coupling must neither be mixed up nor mixed, assignment ⇒ Electronic catalogue of original parts .*

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# 2 Overview of Transmission System

## 2.1 Front-wheel-drive

-Arrows- in direction of travel

1 - Engine

2 - Clutch

3 - Manual gearbox

4 - Drive shaft

5 - Output shaft 5th, 6th gear/ reverse gear

6 - Output shaft gears 1 through 4

7 - Differential gear

I - 1st gear

II - 2nd gear

III - 3rd gear

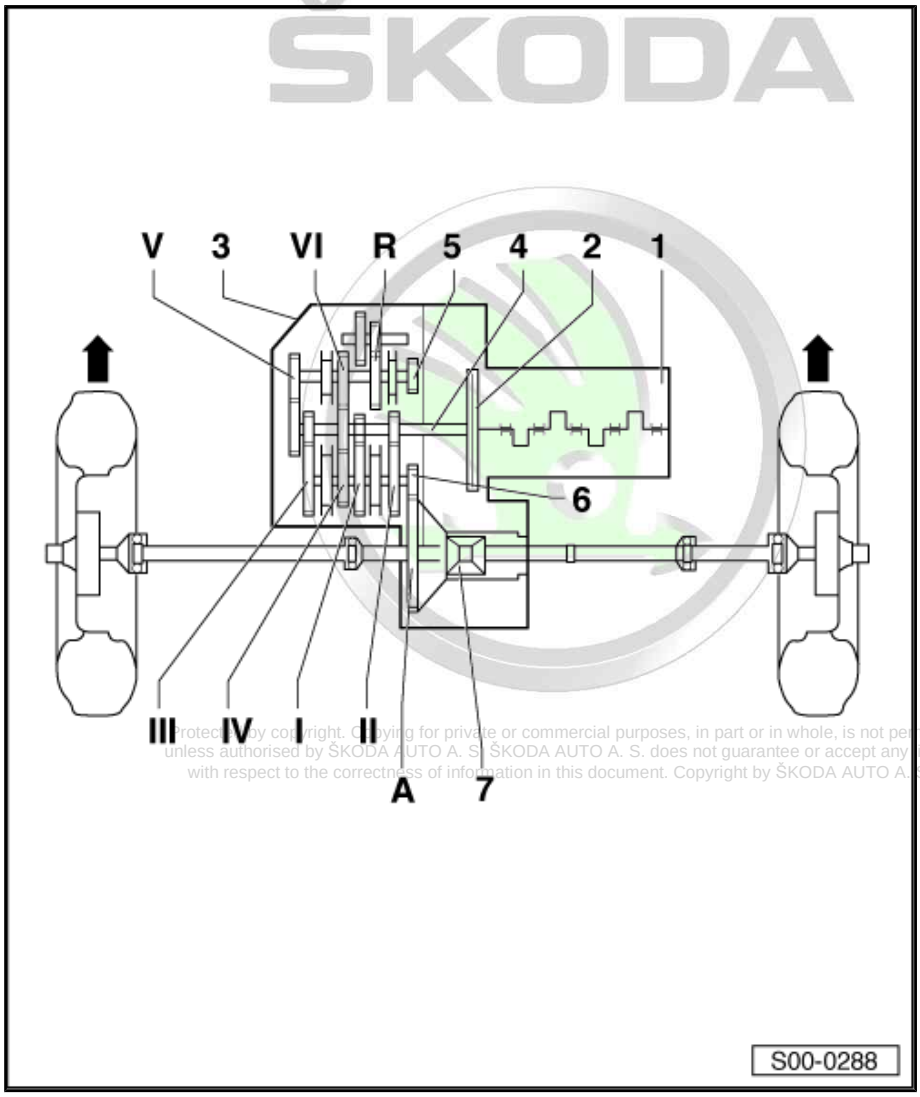
IV - 4th gear

V - 5th gear

VI - 6th gear

R - Reverse gear

A - Final drive

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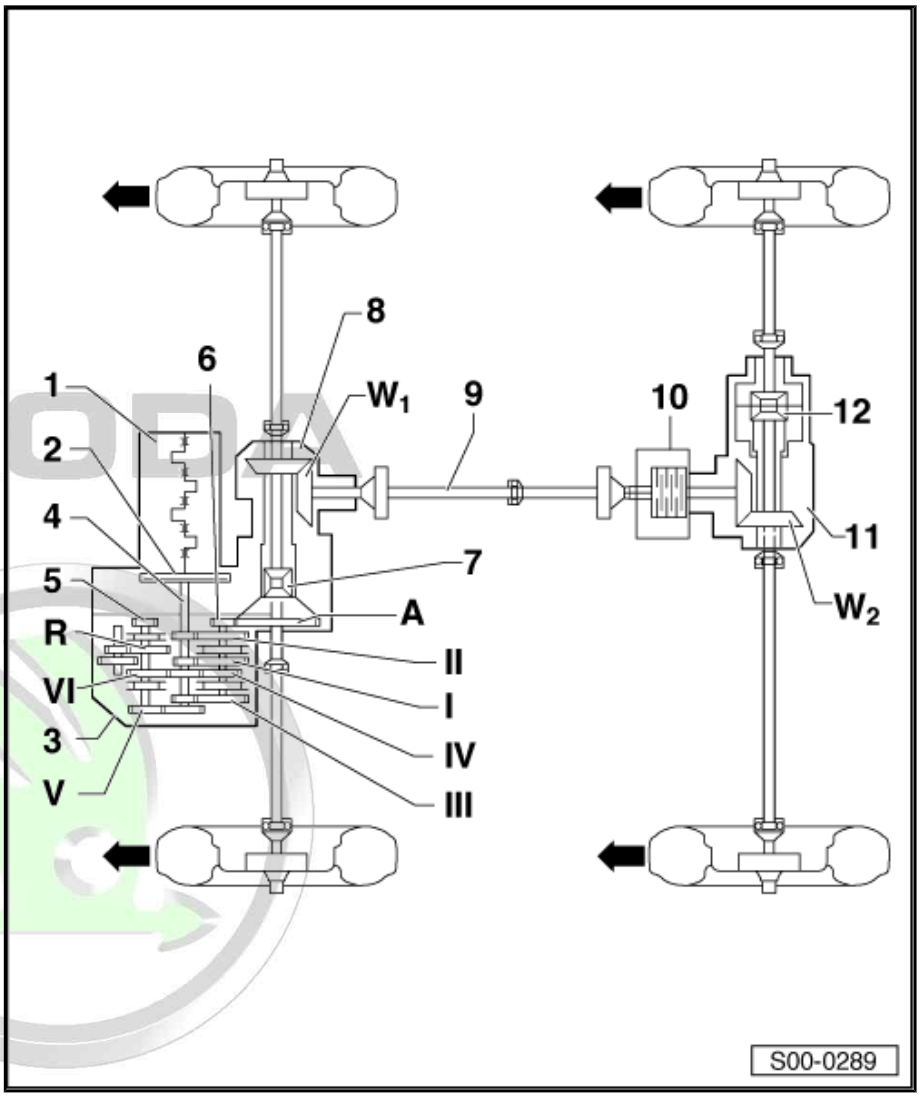
## 2.2 Four-wheel drive

-Arrows- in direction of travel

1 - Engine
2 - Clutch
3 - Manual gearbox
4 - Drive shaft
5 - Output shaft 5th/6th gear/ reverse gear
6 - Output shaft gears 1 through 4
7 - Front differential gear
8 - Angle gearbox
9 - Propshaft
10 - Haldex coupling
11 - Rear final drive
12 - Rear differential gear
I - 1st gear
II - 2nd gear
III - 3rd gear
IV - 4th gear
V - 5th gear
VI - 6th gear
R - Reverse gear
A - Front final drive
W1 - Drive chain of the angle gearbox
W2 - Drive chain of the rear final drive

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# 3 General repair information

Scrupulous care and cleanliness as well as the proper tools are essential requirements for carrying out proper and successful gearbox repairs. Obviously, the generally valid basic safety rules apply to repair work.

A number of generally valid notes for individual repair operations - which are otherwise listed several times at numerous points in the workshop manual - are summarized under the term “components” ⇒ page 18 . They apply to this workshop manual.

## 3.1 Contact corrosion!

- The gearbox housing and the clutch housing are made out of magnesium.
- Bolts and other components that come into direct contact with the gearbox have a surface with varying finishes in relation to it.
- The use of substitute components causes contact corrosion (screws, nuts, washers ...). The gearbox housing and the clutch housing are damaged.
- Generally fit parts which are indicated in the ⇒ Electronic Catalogue of Original Parts .

## 3.2 Components

### Gearbox

- When installing the manual gearbox, ensure the dowel sleeves are correctly located between the engine and gearbox.
- When assembling mounts as well as waxed components, the contact surfaces must be cleaned. Contact surfaces must be free of wax and grease.
- Bolts and other attachments should have a classification in the ⇒ Electronic Catalogue of Original Parts .
- When replacing the gearbox, inspect the gear oil level in the manual gearbox (top up if necessary) ⇒ page 100 .
- Filling capacity ⇒ page 4 .
- Oil specification ⇒ Electronic Catalogue of Original Parts .

### Angle gearbox (four-wheel drive)

- The angle gearbox is screwed on laterally to the manual gearbox and equipped with its own closed oil supply.
- Filling capacity ⇒ page 4 .
- Oil specification ⇒ Electronic Catalogue of Original Parts .
- Inspect gear oil level (top up oil if necessary) ⇒ page 109 .

### Rear final drive

- When replacing the rear final drive, inspect the oil level in the final drive ⇒ page 306 and the oil level in the Haldex coupling (top up with oil if necessary) ⇒ page 300 .
- Filling capacity ⇒ page 4 .
- Oil specification ⇒ Electronic Catalogue of Original Parts .
- When installing waxed carriers and components, the contact surfaces must be cleaned. Contact surfaces must be free of wax and grease.

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**Note**

- *The “Haldex coupling” is located in the rear final drive.*
- *The final drive and the “Haldex coupling” have separate oil circulation systems.*
- *The final drives “02D/0AV” are fitted with the “Haldex coupling of the 2nd generation”.*
- *The final drive “0BR” is fitted with the “Haldex coupling of the 4th generation”.*
- *The rear final drives “02D/0AV” and “0BR” have different “Haldex couplings” as well as different oils for the Haldex coupling.*
- *Both oils for the Haldex coupling must neither be mixed up nor mixed, assignment ⇒ Electronic catalogue of original parts .*

### Targeted fault finding, Vehicle self-diagnosis and Measuring method

- Before repairing the Haldex coupling, try to determine the origin of the damage as accurately as possible using the ⇒ Vehicle diagnosis, testing and information system VAS 5051 in the functions “Targeted fault finding”, “Vehicle self-diagnosis” and “Measuring method”.

### Sealant

- Thoroughly clean the contact surfaces of the housing before applying the silicone sealant.
- Apply sealant AMV 188 200 03 evenly and not too thick.

### Gasket rings, O-rings, gaskets

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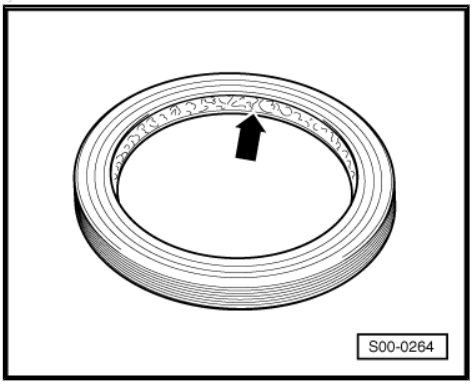
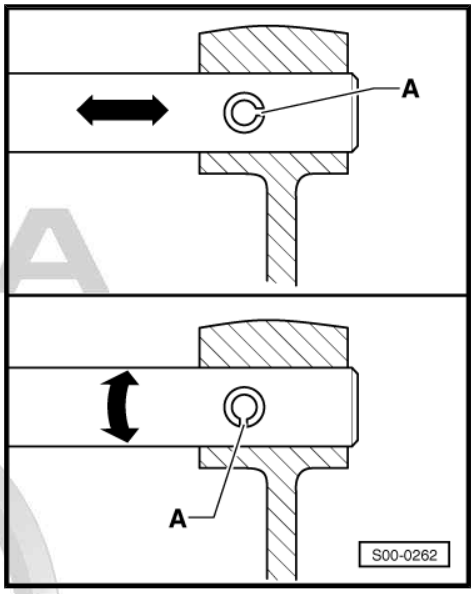
- Always replace gasket rings, O-rings and gaskets ⇒ Electronic Catalogue of Original Parts .
- After removing gaskets, check the contact surface in the housing or shaft for burrs or damage which occured during the assembly.
- Radial shaft seals - before mounting lightly oil at outside diameter and fill half the space between the sealing lips -arrow- with sealing grease -G 052 128 A1- .
- The open side of the sealing rings is turned towards the fluid to be sealed.
- Press in new gasket ring in such a way that the sealing lip is not located on the same point as the sealing lip of the old gasket ring (use tolerance for insertion depth).
- Before inserting lightly oil the O-rings, in order to prevent the rings being squashed during installation.
- Inspect the oil level after replacing the gaskets and gasket rings.




### Locking elements

- Do not over-tension the circlips.
- Always replace damaged or over-tensioned circlips ⇒ Electronic Catalogue of Original Parts .
- Circlips must be positioned in the base of the groove.
- Replace roll pins. Fitting location: slot longitudinally to power flow.




### Screws, nuts

- Slacken the bolts and nuts against the tightening sequence.
- Slacken and tighten screws or fixing nut of covers and housings without tightening sequence diagonally across in stages.
- Replace the self-locking screws and nuts.
- Tightening torques apply for non-oiled nuts and bolts.
- Clean the threaded holes into which self-locking screws or screws with locking agent were screwed in (using e.g. a screw-tap). Otherwise there is a risk that the bolts will shear at the next disassembling.
- It is important to ensure at all bolted connections that the contact surfaces as well as the nuts and bolts are waxed only after being installed, should this be necessary.

### Bearings

- New taper roller bearings are fitted as supplied and do not require any additional lubrication.
- Insert moist all bearings (except taper roller bearings) in the gearbox with gear oil.
- Before installing, heat the inner rings of the tapered-roller bearings on a heating plate or with the induction heater unit , e.g. -VAS 6414- , to approx. 100°C. Press in axial and play-free up to the stop.
- Do not mix up the outer and inner races of bearings of the same size.
- Always jointly replace tapered-roller bearings on the same shaft and use products of the same manufacturer.
- Always position needle bearing with the lettered side (thicker end) towards the drift pin.

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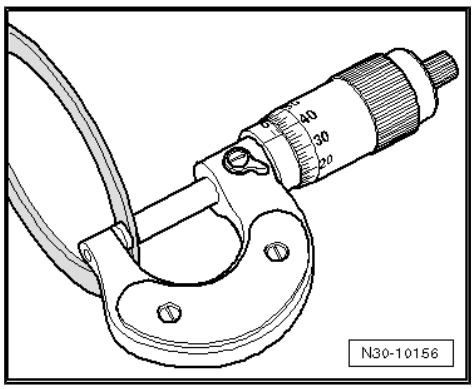
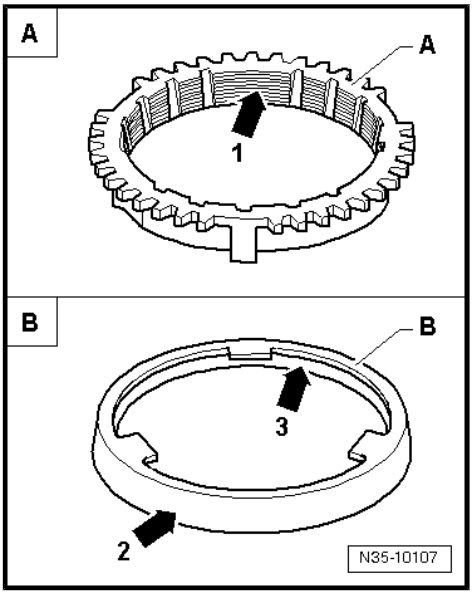
### Shims

- Gauge shims at several points with a micrometer. Different tolerances allow to select the required thickness for each washer very precisely.
- Inspect for burrs and damage.
- Install only adjusting washers which are in perfect condition.




### Synchronizer rings

- These are not interchangeable. If re-using, allocate synchronizer rings to the same sliding gear.
- Inspect for wear, replace if necessary ⇒ Electronic Catalogue of Original Parts .
- Check grooves -arrow 1- on synchronizer ring -A- or inner ring for flattened parts (grooves are worn).
- On the installed intermediate ring -B-, check outer -arrow 2- or inner -arrow 3- contact surface for traces of scoring and friction.
- Check the cone of the sliding gear for traces of scoring and friction.
- Oil with gear oil before installing.




### Gear pinions and synchronizer body

- Clean and heat on a heating plate or with the induction heater unit e.g. -VAS 6414- to approx. 100°C before pressing on.
- When assembling, press up to the stop until there is no axial play.
- Check fitting position.

### Sliding gears

- Inspect wheels 1st to 6th gear for small axial play or clearance after installation.

### Clutch control

- Do not tilt the clutch pressure plate, release or tighten in small stages crosswise
- If the clutch pedal does not return to its initial position after the coupling procedure - clutch pedal in home position - the clutch control must be bled (further measures ⇒ page 35 ).
- In order to reduce unpleasant odours if the clutch is burnt, thoroughly clean the clutch housing as well as the flywheel and the engine on the side of the gearbox.

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# 30 – Clutch

## 1 Repairing clutch control

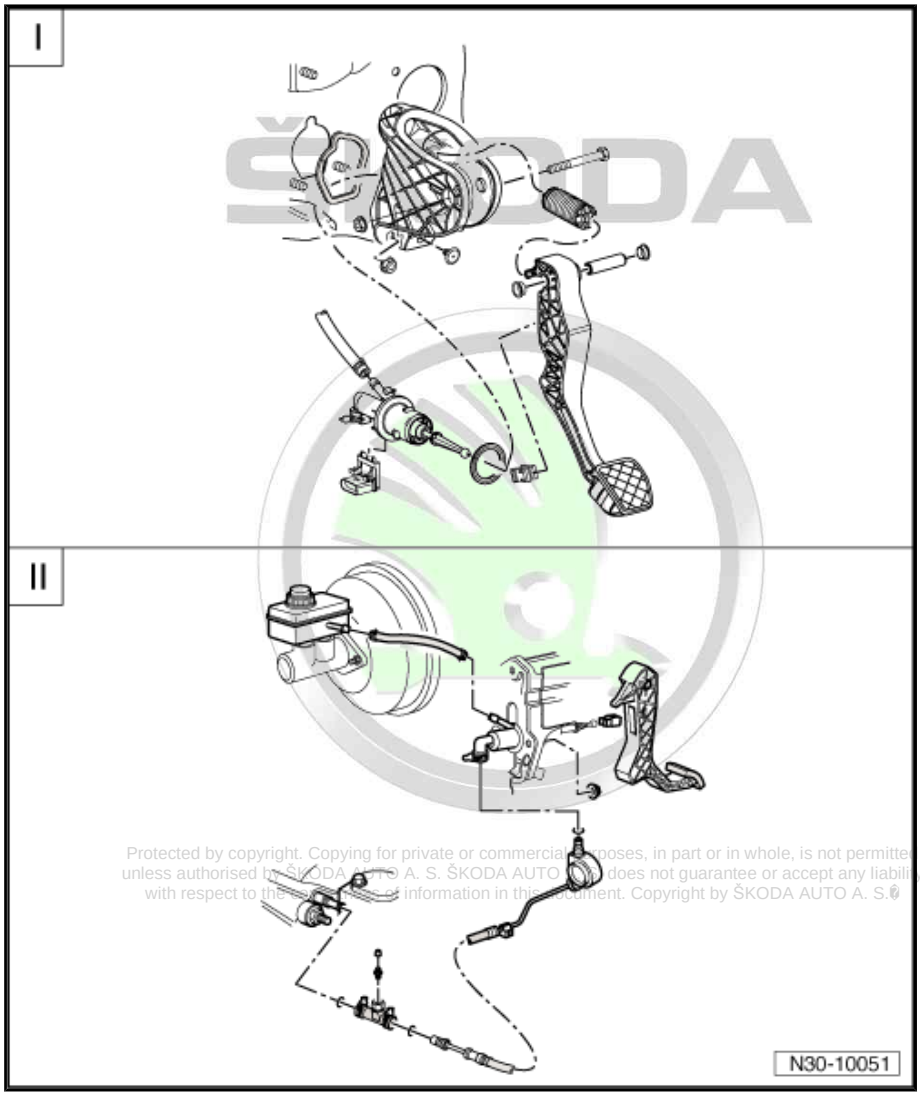
### 1.1 Overview

**Note**

- *If the battery earth strap is disconnected and connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*
- *Grease all bearing and contact surfaces with grease -G 000 450 02- .*

**I - Summary of components - Foot controls** ⇒ page 23

**II - Summary of components - Hydraulics** ⇒ page 33

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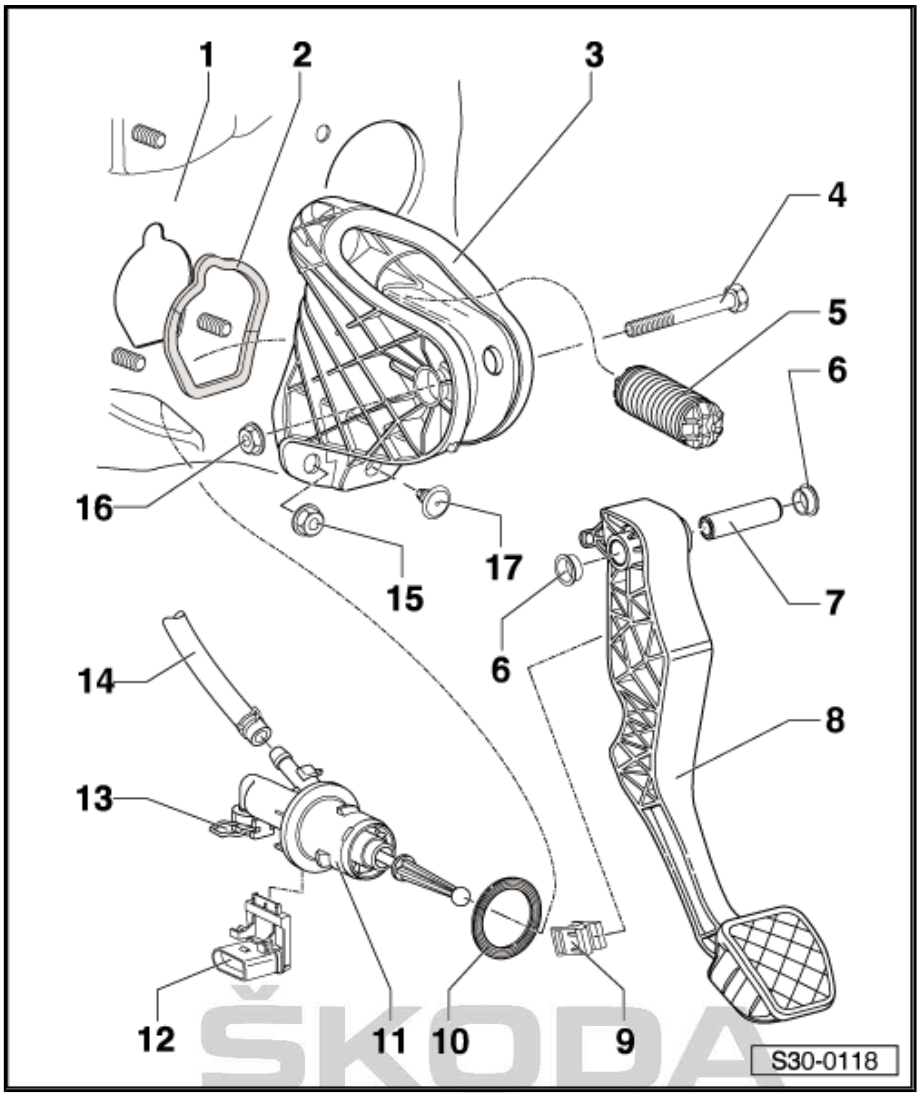
## 1.2 Summary of components - Foot controls




**1 - Front wall**
- ❑ with mount for bracket

**2 - Gasket**
- ❑ replace ⇒ Electronic Catalogue of Original Parts
- ❑ between bracket and front wall
- ❑ self-adhesive
- ❑ glue to bracket

**3 - Bearing bracket**
- ❑ for support of clutch pedal
- ❑ removing and installing ⇒ page 27

**4 - Screw**

**5 - Over-centre helper spring**
- ❑ removing and installing ⇒ page 24

**6 - Bushing**

**7 - Bearing bolt**

**8 - Clutch pedal**
- ❑ removing and installing ⇒ page 25

**9 - Support**
- ❑ removing and installing ⇒ page 25

**10 - Gasket**
- ❑ replace ⇒ Electronic Catalogue of Original Parts
- ❑ between master cylinder and bracket

**11 - Master cylinder**
- ❑ removing and installing after removing the bracket ⇒ page 30
- ❑ test tightness ⇒ page 35

**12 - Clutch position sender -G476-**
- ❑ removing and installing ⇒ page 30
- ❑ check ⇒ Vehicle diagnosis, testing and information system VAS 5051

**13 - Clamp**
- ❑ to remove and install the tube-hose line and/or plastic line pull out retaining clip up to the stop

**14 - Tubing**
- ❑ out of rubber
- ❑ as of 12.05 on certain vehicles out of plastic ⇒ page 33
- ❑ Do not use hose clamp -MP7–602-
- ❑ test tightness ⇒ page 35

**15 - 20 Nm**
- ❑ 3 pieces

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- ❑ self-locking
- ❑ for bracket on front wall
- ❑ replace ⇒ Electronic Catalogue of Original Parts

**16 - 25 Nm**

- ❑ replace ⇒ Electronic Catalogue of Original Parts

**17 - Stop**

- ❑ for the clutch pedal

## 1.3 Removing and installing the over-centre helper spring

**Special tools and workshop equipment required**

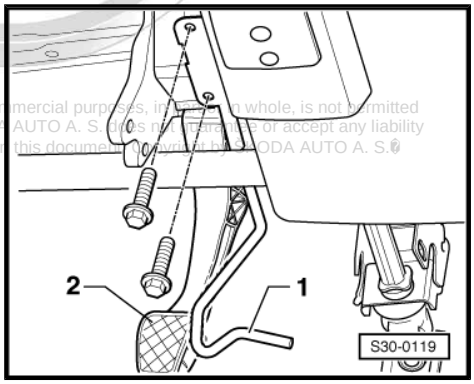
- ♦ Release tool -T10178-

**Removing**

– Push the driver seat as far as possible towards the rear and position the steering wheel in the highest position.

– Remove lower part of the dash panel insert on the driver's side ⇒ Body Work ⇒ Rep. Gr. 70 .

– Unscrew crash strut -1- in front of the clutch pedal -2-.

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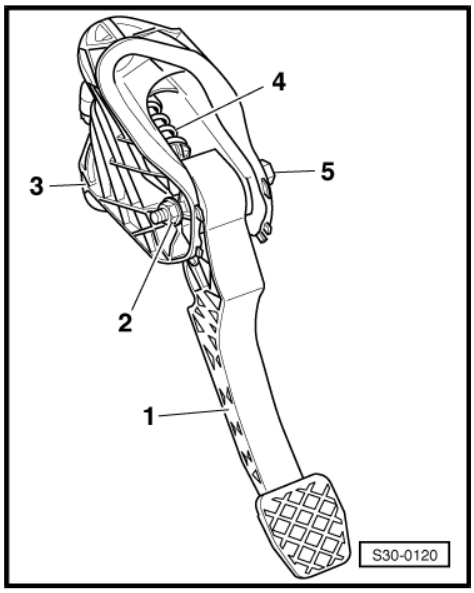
– Unscrew clutch pedal -1- from bracket -3-, to this end release nut -2- and pull out screw -5-.




**Note**

*The clutch pedal remains hanging on the actuating rod of the master cylinder.*

– Swivel clutch pedal slightly downwards and remove over-centre helper spring -4- from the bracket.

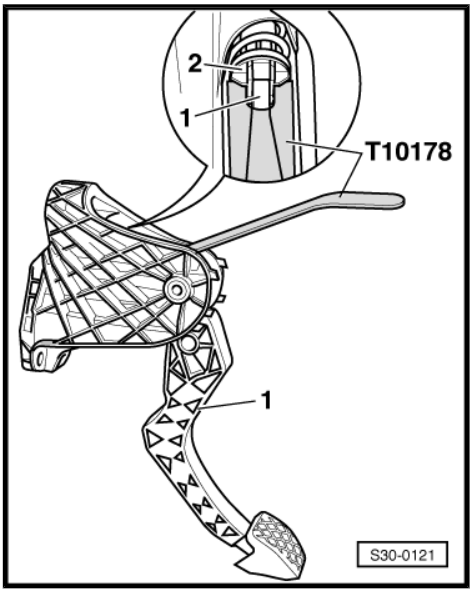
**Install**

Installation is performed in the reverse order, pay attention to the following points:

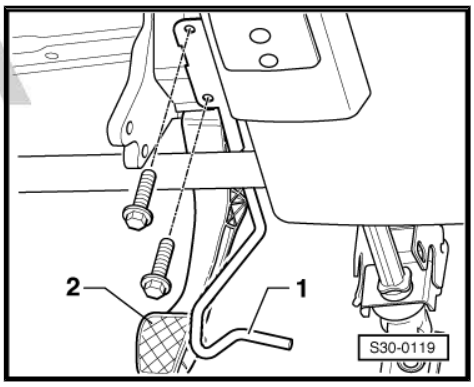
**Note**

*Replace self-locking nut.*

– Insert over-centre helper spring -2- from above into the bracket and while doing so hold the spring end in the fitting position using the release tool -T10178- .
– Insert bearing bolt of clutch pedal into the step bearing of the over-centre helper spring.
– Press on clutch pedal -1- slightly, slide through screw and tighten self-locking nut.




– Screw on crash strut -1- in front of the clutch pedal -2-.
– Install lower part of the dash panel insert on the driver's side ⇒ Body Work ⇒ Rep. Gr. 70 .




**Tightening torques**

| Component | Nm |
|---|---|
| Clutch pedal to bearing bracket | ⇒ Item 16 (page 24) |
| Crash strut to bracket/steering column | 9 |

## 1.4 Removing and installing the clutch pedal

**Special tools and workshop equipment required**

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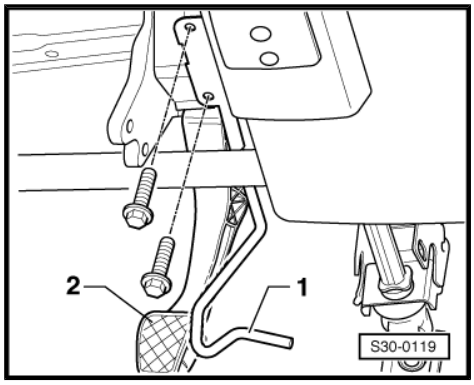
♦ Pliers -T10005-
♦ Release tool -T10178-

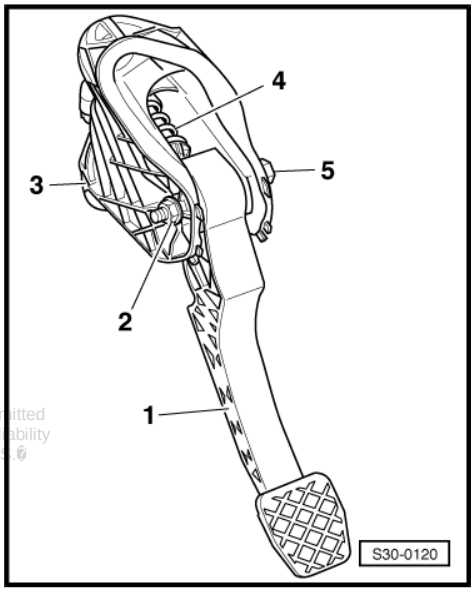
**Removing**

– Push the driver seat as far as possible towards the rear and position the steering wheel in the highest position.
– Remove lower part of the dash panel insert on the driver's side ⇒ Body Work ⇒ Rep. Gr. 70 .

– Unscrew crash strut -1- in front of the clutch pedal -2-.




– Unscrew clutch pedal -1- from bracket -3-, to this end release nut -2- and pull out screw -5-.
– Swivel clutch pedal slightly forwards and remove over-centre helper spring -4- from the bracket.

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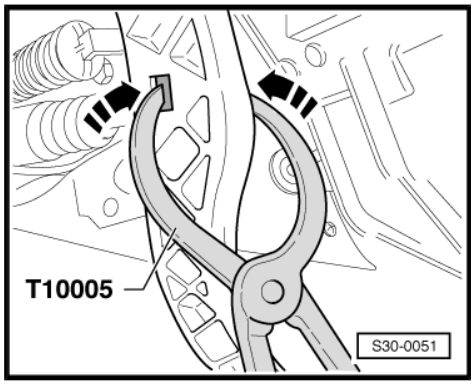
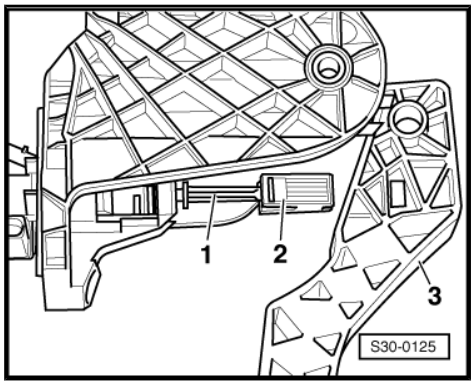
– Release support of actuating rod of master cylinder with the pliers - T10005- .
– Remove clutch pedal.



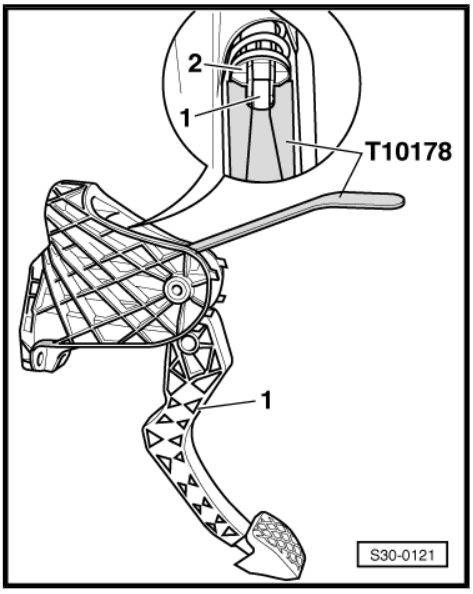

**Install**

Installation is performed in the reverse order, pay attention to the following points:

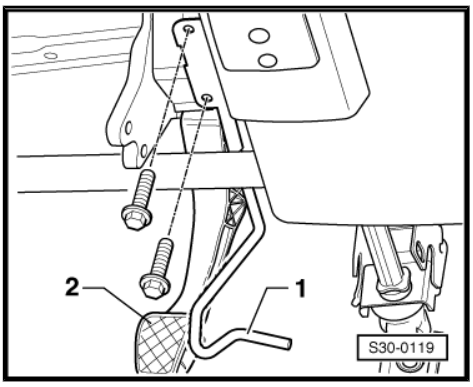
– Attach support -2- to the actuator rod -1- of the master cylinder.
– Press support into the clutch pedal until it audibly clicks into place.



– Insert over-centre helper spring from above into the bracket and while doing so hold the the spring end in the fitting position using the release tool -T10178- .
– Insert bearing bolt of clutch pedal into the step bearing of the over-centre helper spring.
– Press on clutch pedal slightly, slide through screw and tighten self-locking nut.




– Screw on crash strut -1- in front of the clutch pedal -2-.
– Install lower part of the dash panel insert on the driver's side ⇒ Body Work ⇒ Rep. Gr. 70 .




**Tightening torques**

| Component | Nm |
|---|---|
| Clutch pedal to bearing bracket | ⇒ Item 16 (page 24) |
| Crash strut to bracket/steering column | 9 |

## 1.5 Removing and installing bracket

**Special tools and workshop equipment required**

♦ Hose clamp -MP7-602 (3094)-

**Removing**

**Note**

*If the battery earth strap is disconnected and connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*

– Disconnect the battery-earth strap with the ignition off ⇒ Electrical System ⇒ Rep. Gr. 27 .
– Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .
– Remove battery and battery tray ⇒ Electrical System ⇒ Rep. Gr. 27 .

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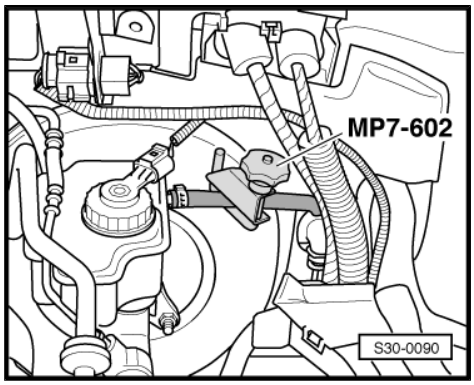
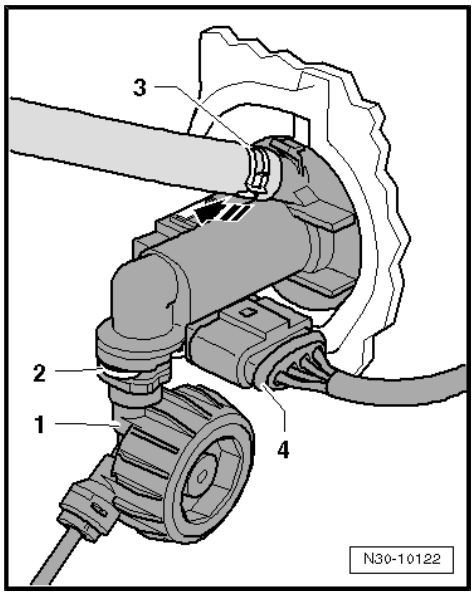
**Note**

- *When performing the following work, make sure that no brake fluid comes into contact with the frame side rail or the gearbox. If this is the case, these points must be cleaned thoroughly.*
- *Lay a cloth below the master cylinder.*

– Pinch off return hose to master cylinder with hose clamp - MP7-602 (3094)- (if the return hose is made out of plastic, do not use the hose clamp -MP7–602- , otherwise the return hose can get damaged).




– Detach return hose -3- at master cylinder (detach plastic return hose at master cylinder and close with a suitable tool e.g. closing tool -T10249/1- ).
– Unlock locking clip -2- with a screwdriver and detach tube-hose line and/or plastic line -1- at master cylinder.
– Clip off clutch position sender -G476- at master cylinder -arrow- and remove with attached connector -4-.

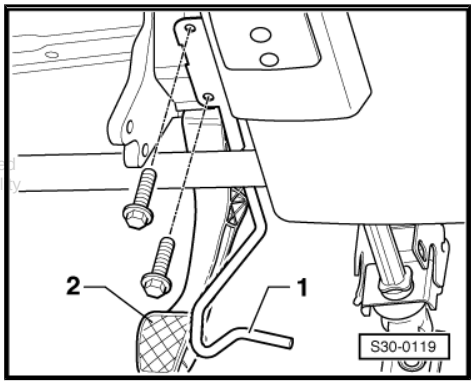



**Note**

*When working in the footwell, protect the floor carpet with cloths from escaping brake fluid.*

– Remove lower part of the dash panel insert on the driver's side ⇒ Body Work ⇒ Rep. Gr. 70 .

– Unscrew crash strut -1- in front of the clutch pedal -2-.

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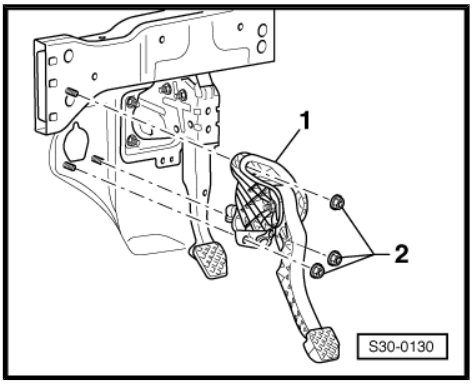
– Unscrew the nuts -2-.
– Remove bracket -1-.



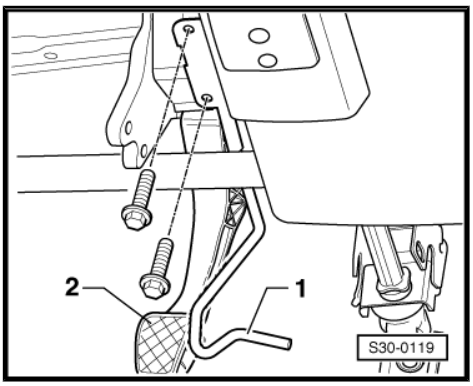

### Install

Installation is performed in the reverse order, pay attention to the following points:

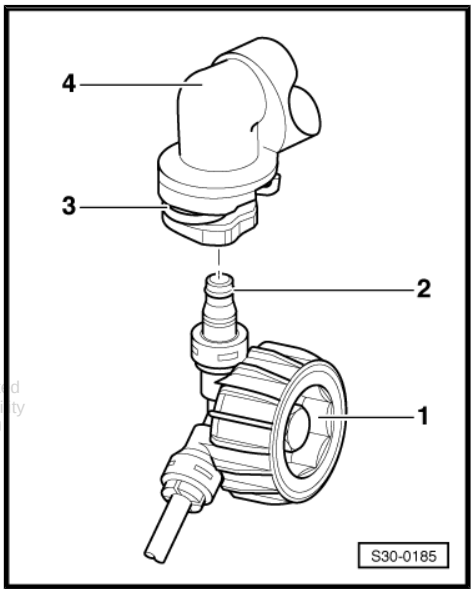
**Note**

- *Replace self-locking nuts.*
- *Replace damaged gasket rings ⇒ Electronic Catalogue of Original Parts .*
- *Secure all hose connections with hose clamps which comply with the series design ⇒ Electronic Catalogue of Original Parts .*

– Screw on crash strut -1- in front of the clutch pedal -2-.
– Install lower part of the dash panel insert on the driver's side ⇒ Body Work ⇒ Rep. Gr. 70 .




– Press in tube-hose line and/or plastic line -1- with gasket ring -2- onto the connection of the master cylinder -4-, until the locking clip -3- is heard to click into position.
– For testing pull on the line -1-.
– Bleed the clutch control ⇒ page 36 .
– Install battery tray and battery ⇒ Electrical System ⇒ Rep. Gr. 27 .
– Install air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .

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*After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*

– Connect earth strap of battery ⇒ Electrical System ⇒ Rep. Gr. 27 .

### Tightening torques

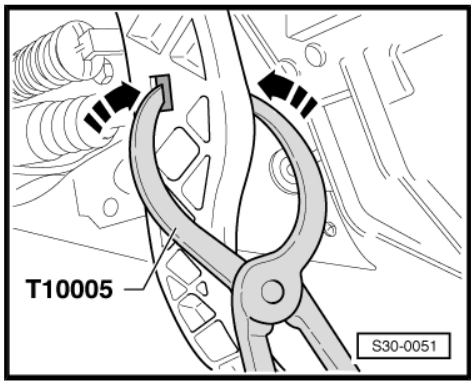
| Component | Nm |
|---|---|
| Clutch pedal to bearing bracket | ⇒ Item 16 (page 24) |
| Crash strut to bracket/steering column | 9 |

## 1.6 Removing and installing the master cylinder

### Removing

– Removing bracket ⇒ page 27 .

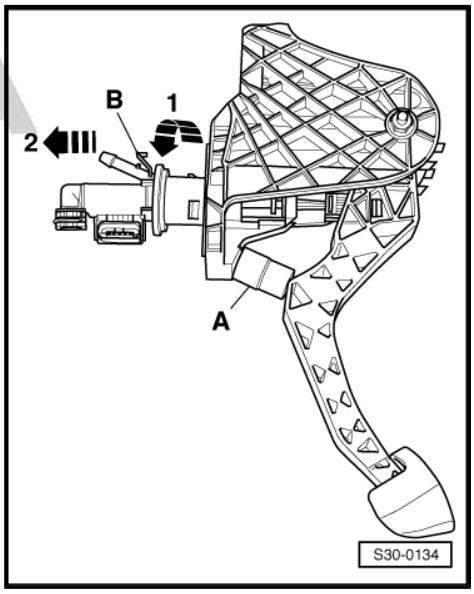
– Release support of actuating rod of master cylinder with the pliers - T10005- .




– Place a spacer -A- between clutch pedal and stop and press clutch pedal forwards.

♦ Length of spacer = approx. 40 mm

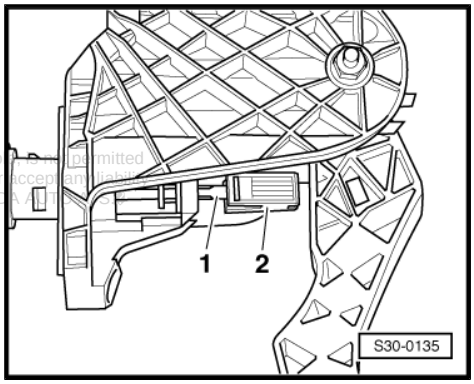
– Release release pin -B- and pull master cylinder out of bracket -arrow 1- and -arrow 2-.




### Install

• Move clutch pedal up to the stop into home position.

– Attach support -2- to the actuator rod -1- of the master cylinder.

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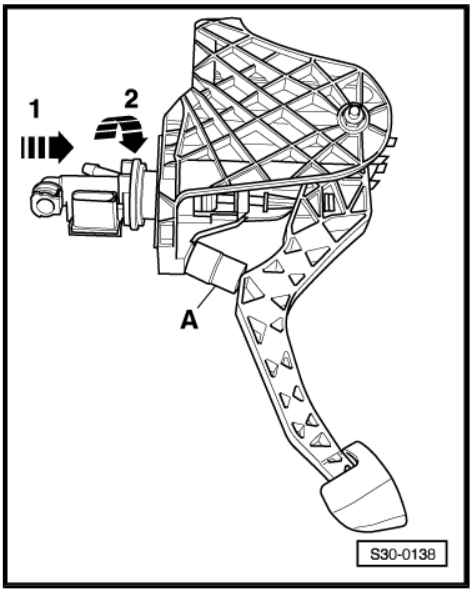
– Place a spacer -A- between clutch pedal and stop and press clutch pedal into operating position.

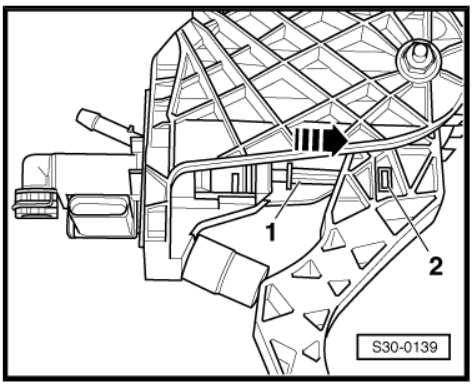
♦ Length of spacer = approx. 40 mm

– Lock master cylinder at bracket -arrow 1- and -arrow 2-.




– Press actuating rod -1- of master cylinder into direction of arrow, until the support -2- locks audibly into the clutch pedal.

– Installing bracket ⇒ page 27 .




## 1.7 Removing and installing clutch position sender -G476-

### Removing

**Note**

*After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*

– Disconnect the battery-earth strap with the ignition off ⇒ Electrical System ⇒ Rep. Gr. 27 .

– Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .

– Remove battery, battery cover and battery tray ⇒ Electrical System ⇒ Rep. Gr. 27 .

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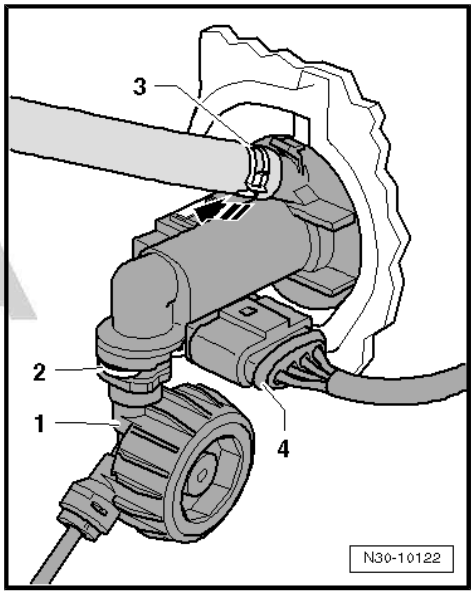
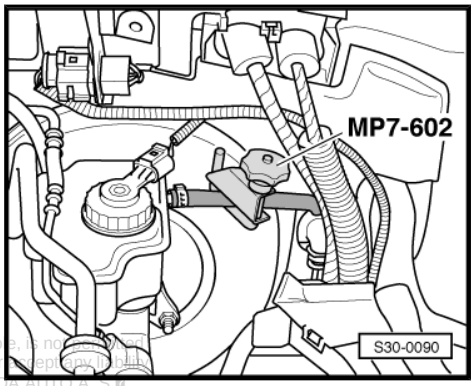
If a tube-hose line and/or plastic line -1- is installed with a round component directly below the master cylinder, the tube-hose line and/or plastic line must be removed.




**Note**

*When performing the following work, make sure that no brake fluid comes into contact with the frame side rail or the gearbox. If this is the case, these points must be cleaned thoroughly.*

– Pinch off return hose to master cylinder with hose clamp - MP7-602 (3094)- (if the return hose is made out of plastic, do not use the hose clamp -MP7–602- , otherwise the return hose can get damaged).

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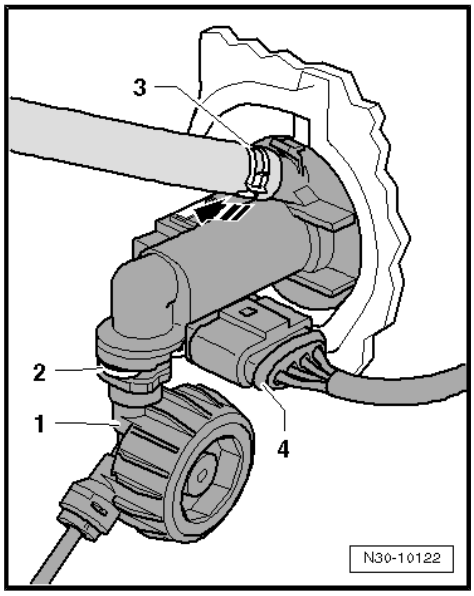
– Detach return hose -3- at master cylinder (detach plastic return hose at master cylinder and close with a suitable tool e.g. closing tool -T10249/1- ).
– Separate electrical plug connection -4-.
– Clip off clutch position sender -G476- at master cylinder -arrow- and remove.




**Install**

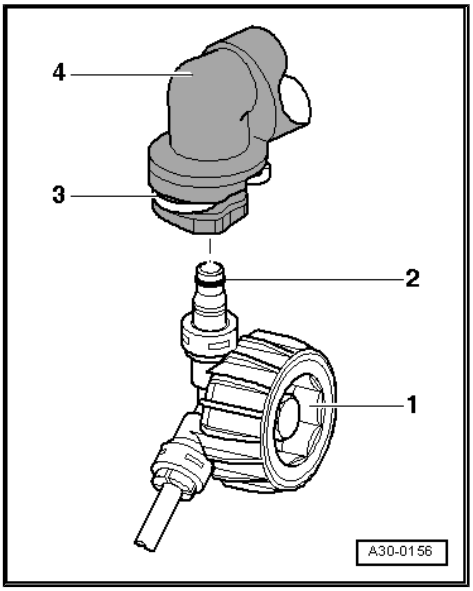
Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Replace damaged gasket rings ⇒ Electronic Catalogue of Original Parts .*
- *Secure all hose connections with hose clamps which comply with the series design ⇒ Electronic Catalogue of Original Parts .*

If the tube-hose line and/or plastic line was removed:

– Press in tube-hose line and/or plastic line -1- with gasket ring -2- onto the connection of the master cylinder -4-, until the locking clip -3- is heard to click into position.
– Check that it locks in place correctly by pulling on the line -1-.
– Bleed the clutch control ⇒ page 36 .
– Install battery tray and battery ⇒ Electrical System ⇒ Rep. Gr. 27 .
– Install air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .




**Note**

*After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*

– Connect earth strap of battery ⇒ Electrical System ⇒ Rep. Gr. 27 .

## 1.8 Summary of components - Hydraulics

**1 - Brake fluid reservoir**
- ❑ test tightness ⇒ page 35

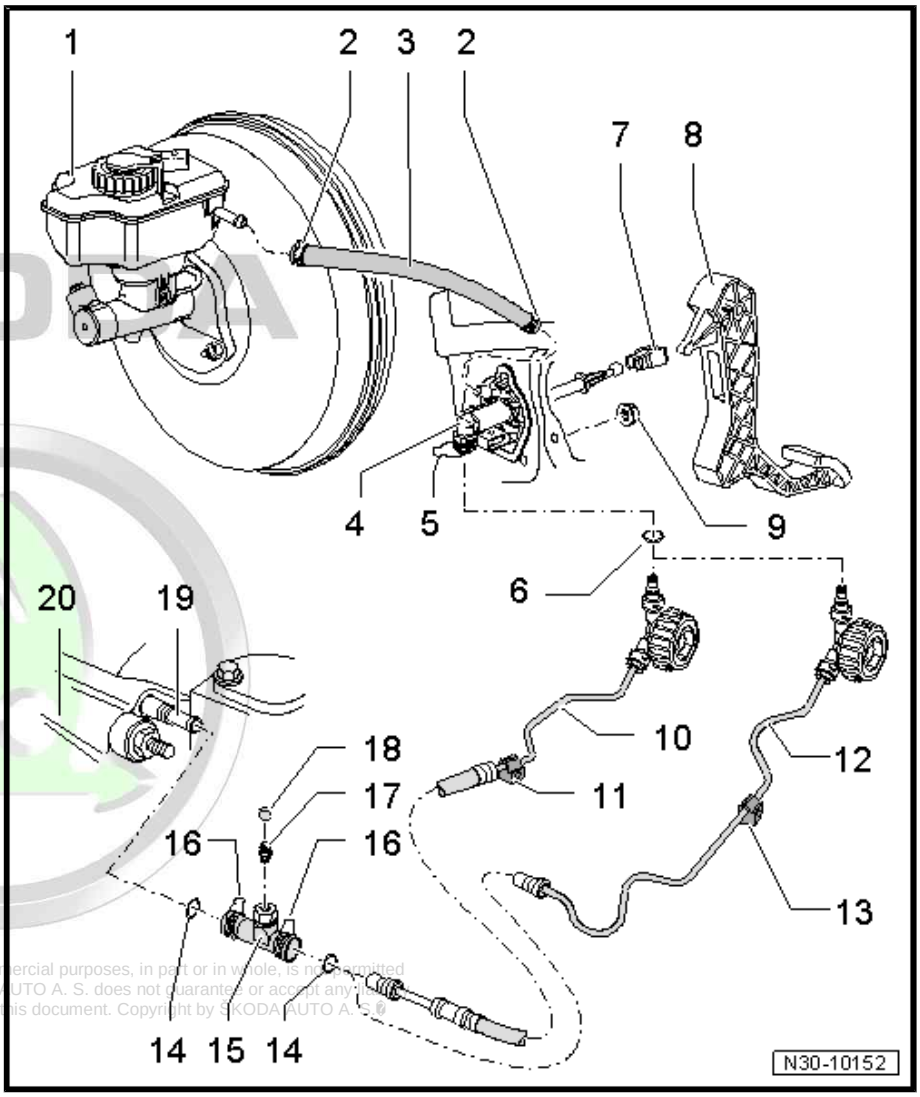
**2 - Spring strap clamp**
- ❑ not fitted to all vehicles

**3 - Tubing**
- ❑ out of rubber
- ❑ as of 12.05 on certain vehicles out of plastic ⇒ page 35
- ❑ Do not use hose clamp -MP7–602-
- ❑ test tightness ⇒ page 35

**4 - Master cylinder**
- ❑ removing and installing ⇒ page 30
- ❑ test tightness ⇒ page 35

**5 - Clamp**
- ❑ to remove and install the tube-hose line and/or plastic line pull out retaining clip up to the stop

**6 - Gasket ring/O-ring**
- ❑ pull onto line connection
- ❑ insert with brake fluid
- ❑ Gasket rings/O-rings adapted to the material of the line connection ⇒ page 35
- ❑ Assignment ⇒ Electron-

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ic Catalogue of Original Parts

- ❑ test tightness ⇒ page 35

**7 - Support**

- ❑ removing and installing ⇒ page 25

**8 - Clutch pedal**

- ❑ removing and installing ⇒ page 25

**9 - 20 Nm**

- ❑ 3 pieces
- ❑ for bracket on front wall
- ❑ replace ⇒ Electronic Catalogue of Original Parts

**10 - Tube-hose line**

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ Remove battery and battery tray for removing ⇒ Electrical System ⇒ Rep. Gr. 27
- ❑ test tightness ⇒ page 35

**11 - Support**

- ❑ Mounted at the structure
- ❑ for tube-hose line pos. 10
- ❑ Difference between the supports ⇒ page 35

**12 - Plastic line**

- ❑ Do not use hose clamp -MP7–602-
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ Remove battery and battery tray for removing ⇒ Electrical System ⇒ Rep. Gr. 27
- ❑ test tightness ⇒ page 35

**13 - Support**

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- ❑ Mounted at the structure
- ❑ for plastic line Pos. 12
- ❑ Difference between the supports ⇒ page 35

**14 - Gasket ring/O-ring**

- ❑ pull onto line connection
- ❑ insert with brake fluid
- ❑ Gasket rings and O-rings adapted to the material of the line connection ⇒ page 35
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ test tightness ⇒ page 35

**15 - Breather**

- ❑ pay attention to different versions, assign via ⇒ Electronic Catalogue of Original Parts
- ❑ test tightness ⇒ page 35

**16 - Clamp**

- ❑ to remove and install the tube-hose line or plastic line or the breather pull out retaining clip up to the stop

**17 - Vent valve**

- ❑ Bleed the clutch control ⇒ page 36
- ❑ pay attention to different versions, assign via ⇒ Electronic Catalogue of Original Parts
- ❑ test tightness ⇒ page 35

**18 - Dust cap**

**19 - Slave cylinder**

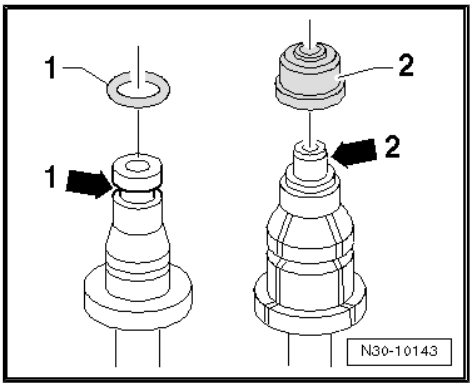
- ❑ can only be replaced without removing gearbox
- ❑ removing and installing ⇒ page 39

❑ test tightness ⇒ page 35

20 - Gearbox

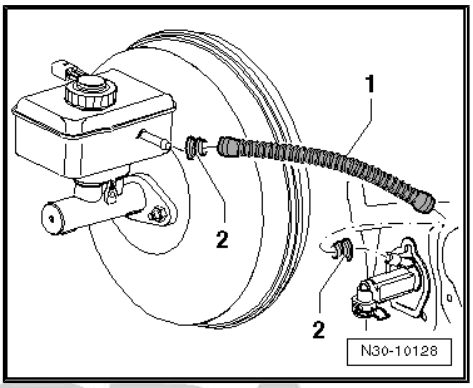
**Gasket rings / O-rings for tube-hose lines and/or plastic line**

- -1- Line connection with circular slot -arrow 1-
- -2- Line connection with collar -arrow 2-



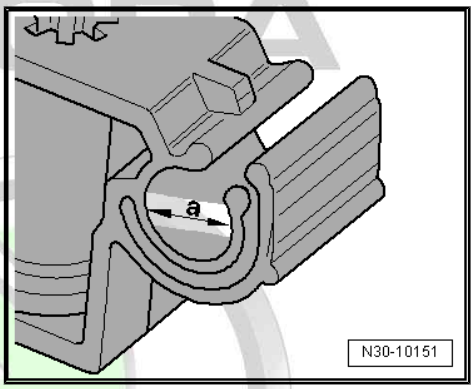

**As of 12.05 - on certain vehicles plastic return hose -1-**

- Gaskets -2- must be present on the return hose.
- Do not use hose clamp -MP7–602-




**Difference between the supports**

| Dimension “a” mm | Version of the line |
|---|---|
| 8 | Plastic line |
| 6 | Tube-hose lines |




## 1.9 Test of hydraulic clutch control

- The pedal actuation must not be obstructed by a moved or an additional foot mat.

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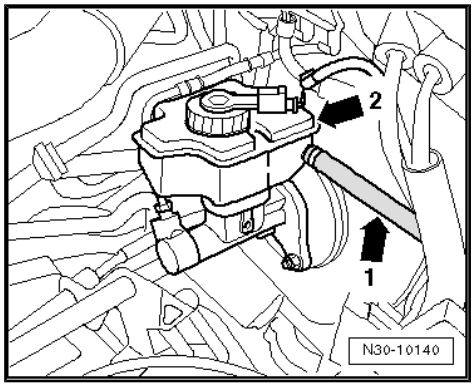
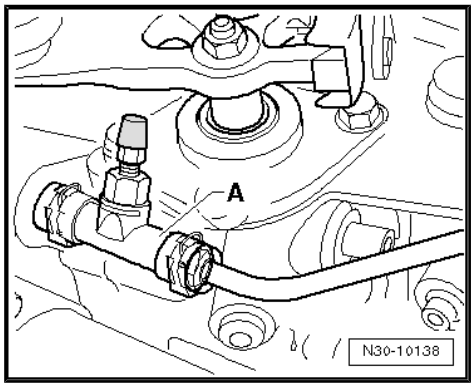
– First of all check the brake fluid level in the brake fluid reservoir.




**Note**

- *The clutch hydraulic is connected to one of the chambers -arrow 2- of the brake fluid reservoir by the return hose -arrow 1-.*
- *If there is no or little brake fluid in this chamber, there is a leak in the system.*
- *Bleed the clutch control if necessary* ⇒ page 36 .

– Subsequently check the following components of the hydraulic clutch control for external leak:



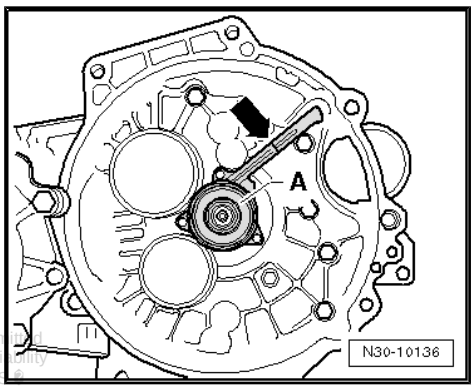

- Return hose between brake fluid reservoir and master cylinder
- Master cylinder
- Tube-hose line or plastic line between master and slave cylinder
- Connection points (plug and screw connections) also in a non-visible area
- Bleeder -A- (slave cylinder is located in the clutch housing)

**Note**

- *Symptoms of an external leak are, amongst others, traces of brake fluid below the gearbox or on the noise insulation under the gearbox.*
- *Check the correct routing of the plastic line between the master and slave cylinder. The line must not be kinked or trapped.*

– Subsequently depress the clutch pedal carefully, at the same time hold the foot controls in five different positions for approx. 20 seconds over the entire distance the pedal has to travel. While doing so, a second person must check if fluid is leaking from the components of the hydraulic clutch control ⇒ page 36 . At the same time the first person must check if the clutch pedal falls through on its own while being held.

– If necessary remove gearbox. Remove slave cylinder -A- and check for brake fluid leak.




Observe that the supply line can be separated on certain slave cylinders -A- -arrow-.

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## 1.10 Bleed the clutch control

**Special tools and workshop equipment required**

- Brake filling and bleeding device e.g. -VAS 5234- or -ROMESS S15-

**Note**

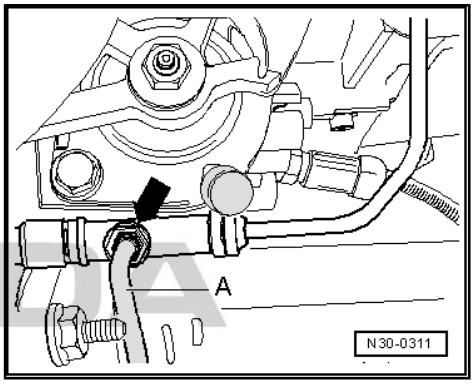
*A pre-filling of the system is not necessary!*

Brake fluid specification ⇒ Chassis ⇒ Rep. Gr. 47 .

– Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .
– Connect the brake filling and bleeding device .

To bleed use ventilation hose -A-.

– Then connect ventilation hose with the drip bottle of the brake bleeding device.
– Fit the ventilation hose -A- onto the bleeder -arrow-.
– Activate system with a pressure of 0.2 MPa (2 bar).
– Open vent valve.




**Note**

*On certain vehicles the vent valve can be opened by hand. To do so, turn the vent valve to the left by 180° as far as the stop.*

– Allow approx. 100 $cm^3$ of brake fluid to flow out.
– Close vent valve.
– Activate foot controls forcefully from stop to stop between 10 and 15 times.
– Open vent valve.
– Allow approx. 50 $cm^3$ more brake fluid to flow out.
– Close vent valve.
– After completing the bleeding procedure activate the clutch pedal repeatedly.
– Install air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .

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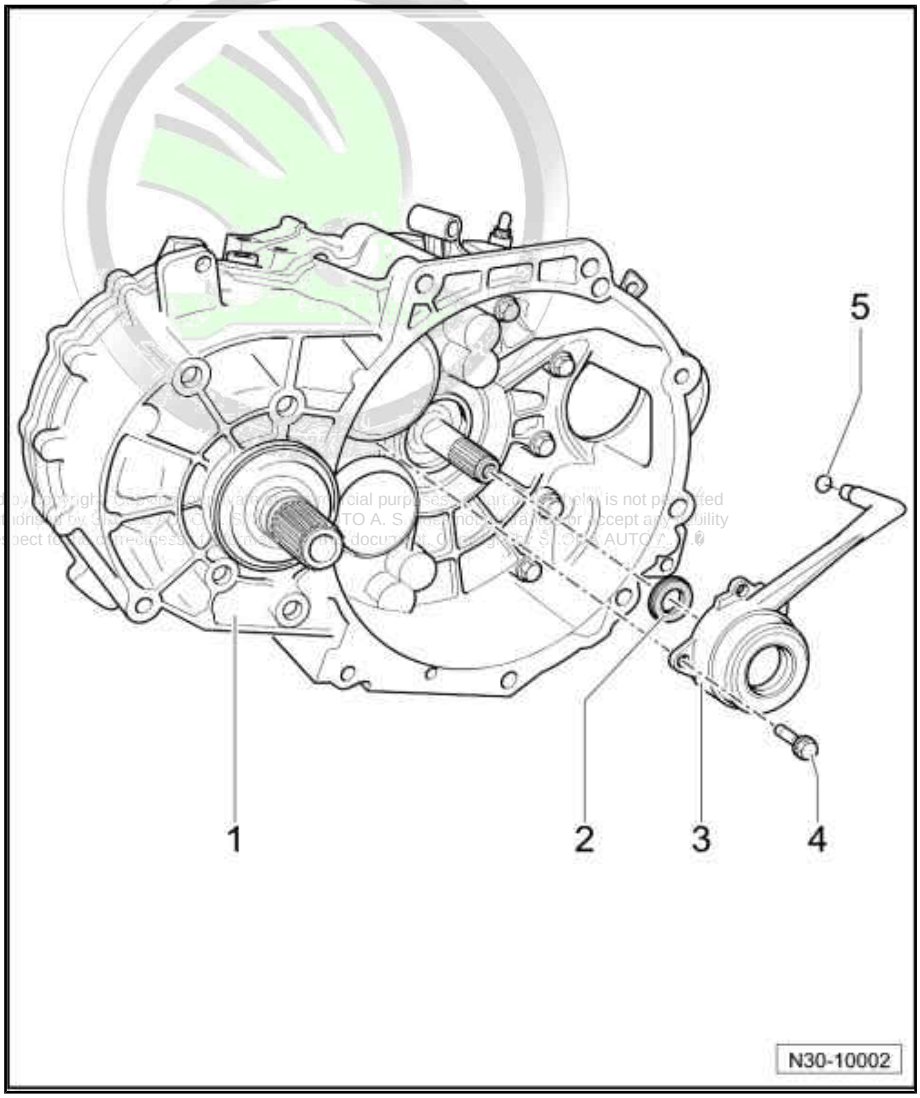
# 2 Repairing clutch control

## 2.1 Summary of components




**1 - Gearbox**

**2 - Gasket ring for drive shaft**

- ❑ replace ⇒ page 40

**3 - Slave cylinder with release bearing**

- ❑ form one unit, can only be replaced together
- ❑ Do not wash the bearing, just wipe clean
- ❑ replace noisy bearings together with slave cylinder
- ❑ on certain slave cylinders separated supply line ⇒ page 39
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ page 39

**4 - Screw**

- ❑ for metal slave cylinder: 12 Nm (without locking agent)
- ❑ for plastic slave cylinder: 15 Nm (with locking agent)
- ❑ 3 pieces
- ❑ replace ⇒ Electronic Catalogue of Original Parts
- ❑ carefully tighten in small stages crosswise so that the screw-down eyes of the slave cylinder do not break off

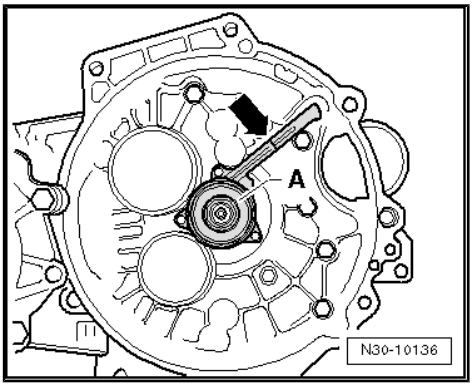
**5 - O-ring**

- ❑ pull onto line connection
- ❑ insert with brake fluid

### Slave cylinder with separated supply line

The supply line is separated on certain slave cyclinders -A- in the area of the -arrow-.

Assignment ⇒ Electronic Catalogue of Original Parts .




## 2.2 Remove and install slave cylinder with clutch release bearing

**Note**

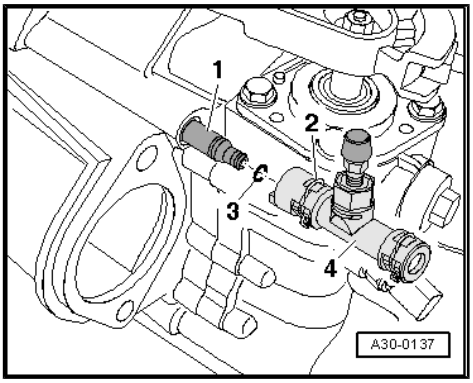
*Slave cylinder and clutch release bearing form one unit and can only be replaced together.*

### Removing

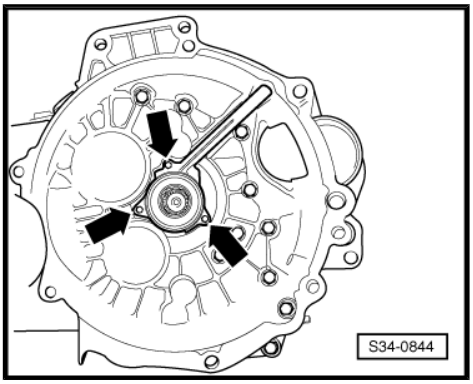
– Removing gearbox - Front-wheel-drive ⇒ page 81 .

– Removing gearbox - Four-wheel drive ⇒ page 88 .

– Unlock locking clip -2- with a screwdriver and detach bleeder -4- from slave cylinder -1-.




– Remove slave cylinder with release bearing -arrows-.




### Install

Installation is performed in the reverse order, pay attention to the following points:

• The fixing screws for the slave cylinder must only be tightened in small stages.

Otherwise there is the risk that the tabs with the bolt-holes break off.

– Tighten slave cylinder with release bearing to tightening torque.

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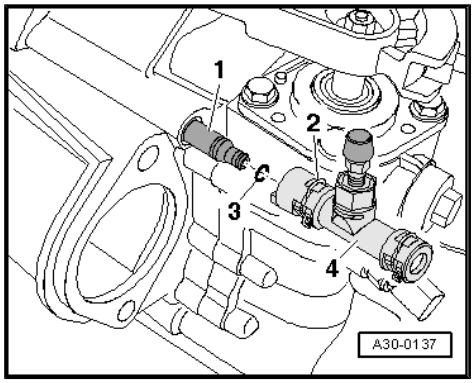
– Inspect the O-ring -3- at slave cylinder for damage.
– Press in the bleeder -4- at the connection of the slave cylinder -1- until the locking clip -2- clicks into place.
– For checking pull at bleeder -4-.
– Installing the gearbox ⇒ page 97 .
– Bleed the clutch control ⇒ page 36 .




**Tightening torque**

| Component | Nm |
|---|---|
| Slave cylinder to gearbox | ⇒ Item 4 (page 38) |

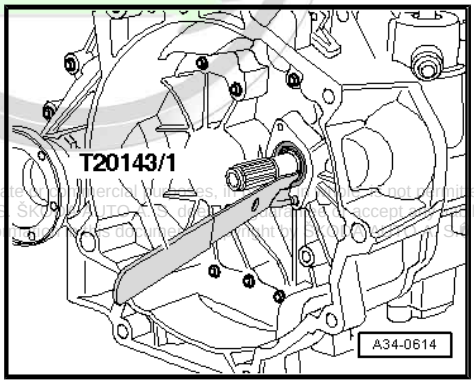
## 2.3 Replace gasket ring for drive shaft

**Special tools and workshop equipment required**

♦ Thrust piece -T40008-
♦ Extraction hook -T20143/1-
♦ Sealing grease -G 052 128 A1-

**Removing**

– Removing gearbox - Front-wheel-drive ⇒ page 81 .
– Removing gearbox - Four-wheel drive ⇒ page 88 .
– Remove slave cylinder with release bearing ⇒ page 39 .
– Lever out gasket ring for drive shaft with ejection hook -T20143/1- .




**Note**

*Do not damage contact surface for shaft seal on the drive shaft.*

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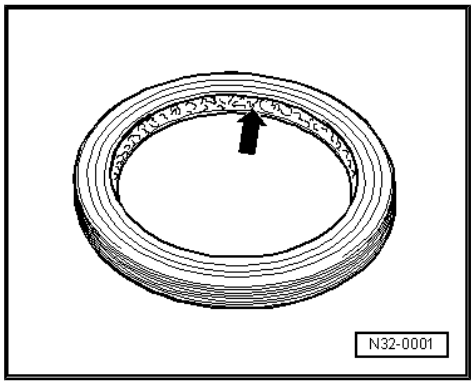
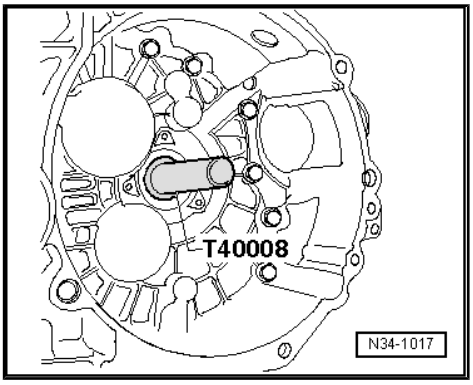
**Install**

– Fill half the space between the sealing lip and dust lip with sealing grease -G 052 128 A1- .
– Slightly moisten the outer circumference of the gasket ring with gearbox oil.



– Insert the gasket ring for the drive shaft until flush.
– Install slave cylinder with release bearing ⇒ page 39 .
– Installing the gearbox ⇒ page 97 .

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# 3 Repairing clutch

**Special tools and workshop equipment required**

- Counterholder -MP1-223 (3067)-
- Centering mandrel -T10097-
- Grease for plug serration of clutch disc -G 000 100-

## 3.1 Summary of components - Repairing the clutch make “Sachs”

**Note**

- *Before replacing the clutch disc and pressure plate fault finding power transmission - observe complaints of the clutch and clutch control ⇒ page 49 .*
- *Replace the clutch discs and pressure plates if the riveting is damaged or loose.*
- *Assign the clutch disc and pressure plate in accordance with engine identification characters ⇒ Electronic Catalogue of Original Parts .*
- *The two-mass flywheel, pressure plate and clutch disc are assigned to each other and must not be installed together with components from other manufacturers.*

**1 - The two-mass flywheel**

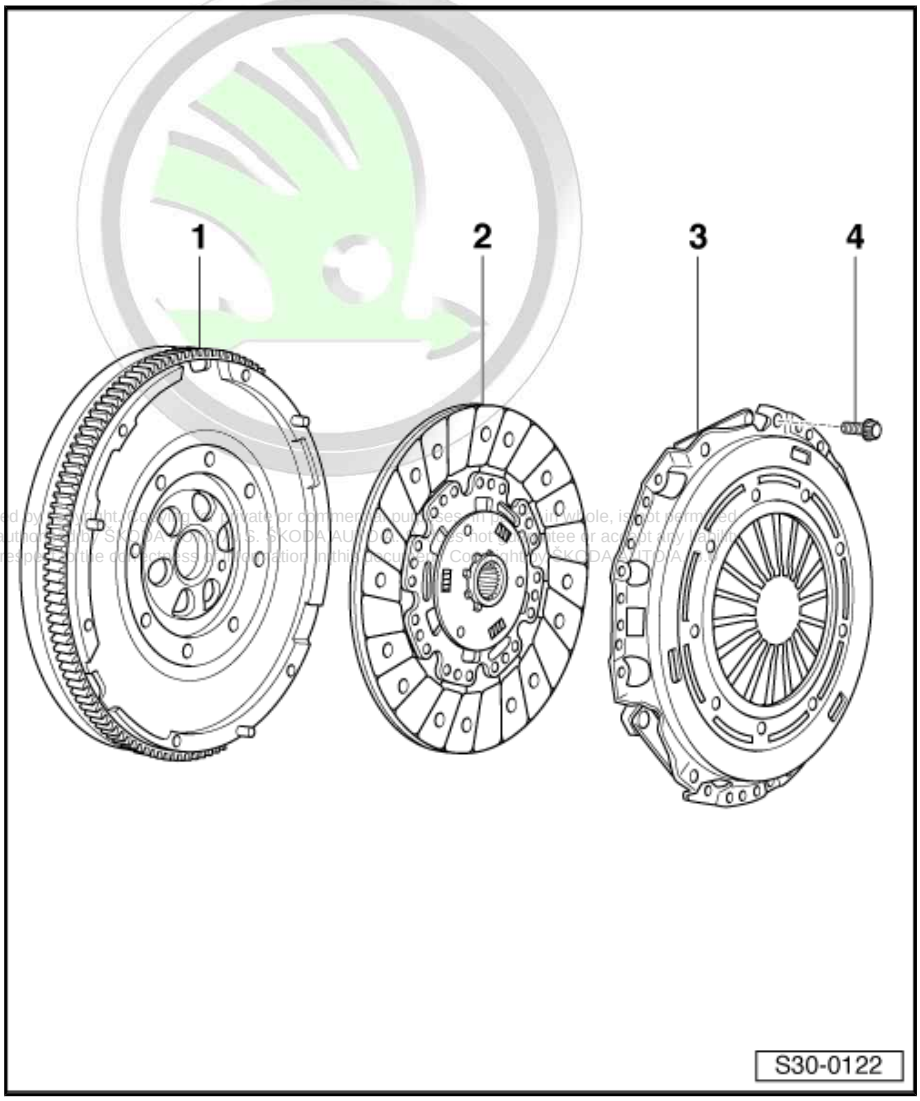
- ❑ make sure the centering pins are tight
- ❑ The locating face for the clutch lining must be free from grooves, oil and grease
- ❑ Observe removal instructions for two-mass flywheel ⇒ engine ⇒ Rep. Gr. 13
- ❑ removing and installing ⇒ Engine ⇒ Rep. Gr. 13

**2 - Clutch disc**

- ❑ Assign the diameter via the ⇒ Electronic catalogue of original parts
- ❑ removing and installing ⇒ page 43
- ❑ must only be replaced together with pressure plate
- ❑ Fitting position ⇒ page 44

**3 - Pressure plate**

- ❑ assign ⇒ Electronic Catalogue of Original Parts
- ❑ with resetting mechanism
- ❑ Distinguishing feature ⇒ page 43
- ❑ removing and installing ⇒ page 43




SKODA

- ❑ Check the extremities of the membrane spring ⇒ page 44
- ❑ Check feather joints and riveted joints ⇒ page 44
- ❑ must only be replaced together with clutch disc Pos. 2

**4 - Screw M6 - 13 Nm; screw M7 - 20 Nm**

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ release or tighten in small stages crosswise

## 3.2 Removing and installing clutch make “Sachs”

### 3.2.1 Removing

– Removing gearbox - Front-wheel-drive ⇒ page 81 .

– Removing gearbox - Four-wheel drive ⇒ page 88 .

**In order to avoid a deformation of the pressure plate when removing it (this leads to jerking during start-up), the pressure plate must be loosened as follows:**

– Insert counterholder -MP1-223- to slacken the bolts.

– Release bolts in small stages crosswise.

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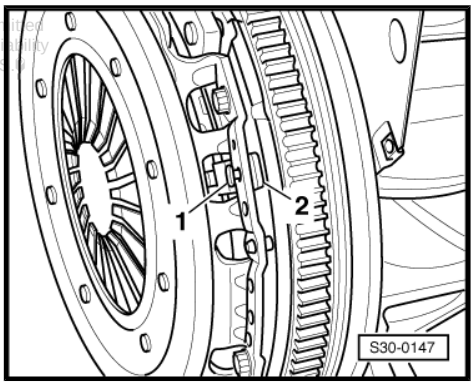
• When unscrewing, the stop must slacken -2- together with the bolt -1-.

– If the stop does not slacken: Press bolt in the direction of the flywheel.

– Remove pressure plate and clutch disc.




### 3.2.2 Install

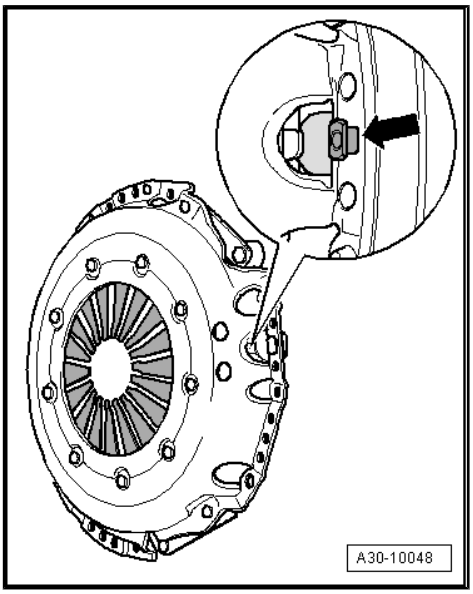
Installation is performed in the reverse order, pay attention to the following points:

**Note**

- ♦ *Replace pressure plate and clutch disc together.*
- ♦ *Assign the pressure plate and clutch disc in accordance with the engine identification characters via the ⇒ Electronic catalogue of original parts .*
- ♦ *The two-mass flywheel, pressure plate and clutch disc are assigned to each other and must not be installed together with components from other manufacturers.*

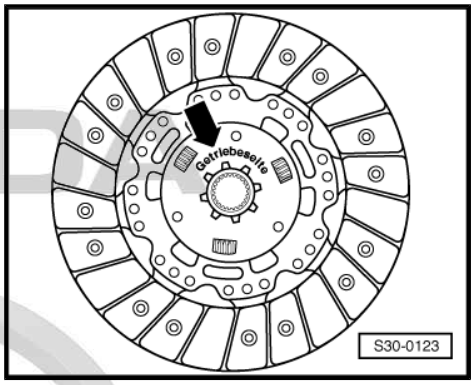
**Distinguishing feature self-adjusting clutch type “Sachs”**

- ♦ Pressure plate with stop (position sensor) -arrow-.



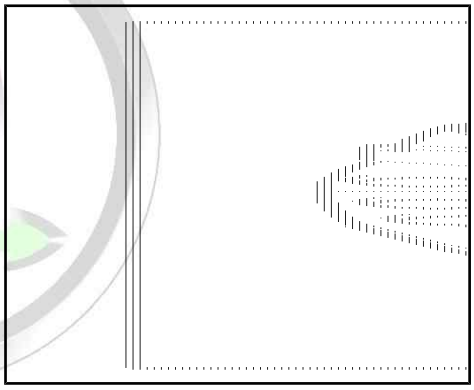
### Fitting location of clutch disc

- Legend “side of gearbox” and the protruding spring cage points to the gearbox.




### Check the extremities of the membrane springs

- Wear is allowed up to half the membrane spring thickness -arrows-.



### Check feather joints and riveted joints

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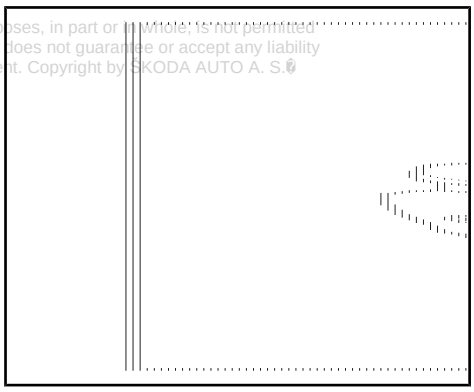
– Check the feather joints between pressure plate and cover for cracks as well as the riveted joints for firm seating.

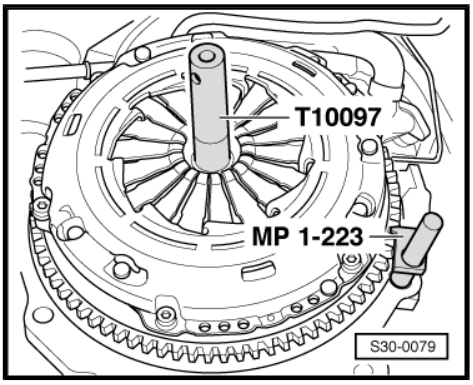
- Pressure plate with damaged feather joints or with loose riveted joints -arrows- must be replaced.



**Note**

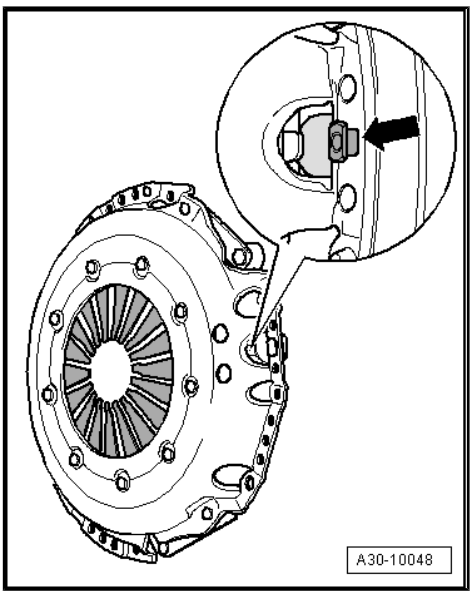
- *Replace the clutch discs and pressure plates if the riveting is damaged or loose.*
- *Always replace pressure plate and clutch disc together.*
- *Assign the pressure plate and clutch disc in accordance with the engine identification characters via the ⇒ Electronic catalogue of original parts .*
- *In order to reduce unpleasant odours if the clutch is burnt, thoroughly clean the clutch housing as well as the flywheel and the engine on the side of the gearbox.*
- *Clean the drive shaft serration and hub serration on used clutch discs, remove corrosion. Apply a very thin layer of grease for plug serration of clutch disc -G 000 100- onto the serration. Subsequently move the clutch disc up and down on the drive shaft until the hub fits smoothly on the shaft. Remove all excess grease.*
- *The pressure plates are protected against corrosion and are greased. Only clean the thrust surface as otherwise the life of the clutch may be considerably reduced.*
- *The thrust surface of the pressure plate and the clutch disc lining must fully rest against the flywheel. Only then may the fixing screws be inserted.*

– When installing, insert the counterholder -MP1-223 (3067)- for tightening the screws.
– Place the pressure plate onto the centering pins.
– Use centering mandrel -T10097- for centering the clutch disc.




**In order to avoid a deformation of the pressure plate when installing it (this leads to jerking during start-up), the pressure plate must be installed as follows:**

– Pay attention that the stop bolt (position sensor) -arrow- can move freely.
– Screw in all the screws by hand uniformly, until the bolt head rests against the pressure plate.
– Tighten the screws gradually and crosswise so as not to damage the centering holes on the pressure plate and the centering pins of the flywheel, while doing so the stop bolt -arrow- must not be lifted up from the pressure plate.
– Tighten all 6 screws gradually to tightening torque ⇒ Item 4 (page 43) .
– Installing the gearbox ⇒ page 97 .




## 3.3 Summary of components - Repairing the clutch make “LuK”

**Note**

- *Before replacing the clutch disc and pressure plate fault finding power transmission - observe complaints of the clutch and clutch control ⇒ page 49 .*
- *Replace the clutch discs and pressure plates if the riveting is damaged or loose.*
- *Assign the clutch disc and pressure plate in accordance with engine identification characters ⇒ Electronic Catalogue of Original Parts .*
- *The two-mass flywheel, pressure plate and clutch disc are assigned to each other and must not be installed together with components from other manufacturers.*

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**1 - The two-mass flywheel**

- ❑ make sure the centering pins are tight
- ❑ The locating face for the clutch lining must be free from grooves, oil and grease
- ❑ Observe removal instructions for two-mass flywheel ⇒ engine ⇒ Rep. Gr. 13
- ❑ removing and installing ⇒ Engine ⇒ Rep. Gr. 13

**2 - Clutch disc**

- ❑ Diameter: assign ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ page 46
- ❑ must be only replaced together with “SAC” pressure plate Pos. 3
- ❑ Fitting position ⇒ page 47

**3 - “SAC”-Pressure plate**

- ❑ “SAC” (Self Adjusting Clutch) means “self-adjusting clutch”
- ❑ assign ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ page 46
- ❑ Check the extremities of the membrane spring ⇒ page 47
- ❑ Check feather joints and riveted joints ⇒ page 47
- ❑ Only check the position of the resetting mechanism on new pressure plates ⇒ page 48
- ❑ must only be replaced together with clutch disc Pos. 2

**4 - Screw M6 - 13 Nm; screw M7 - 20 Nm**

- ❑ release or tighten in small stages crosswise
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

## 3.4 Removing and installing clutch make “LuK”

### 3.4.1 Removing

– Removing gearbox - Front-wheel-drive ⇒ page 81.

– Removing gearbox - Four-wheel drive ⇒ page 88.

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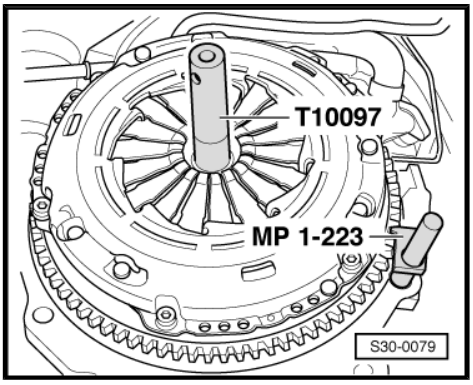
**In order to avoid a deformation of the pressure plate when removing it (this leads to jerking during start-up), the pressure plate must be loosened as follows:**

– Insert counterholder -MP1-223 (3067)- to slacken the bolts.
– Release bolts in small stages crosswise.
– Remove pressure plate and clutch disc.

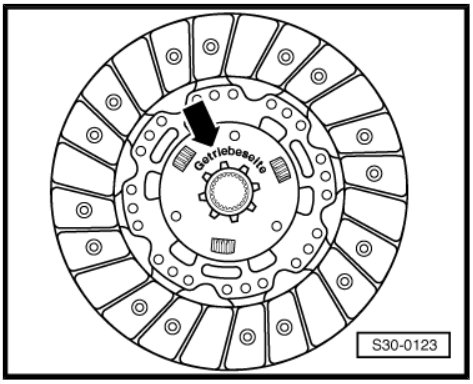



## 3.4.2 Install

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Replace pressure plate and clutch disc together.*
- *Assign the pressure plate and clutch disc in accordance with the engine identification characters via the ⇒ Electronic catalogue of original parts .*
- *The two-mass flywheel, pressure plate and clutch disc are assigned to each other and must not be installed together with components from other manufacturers.*

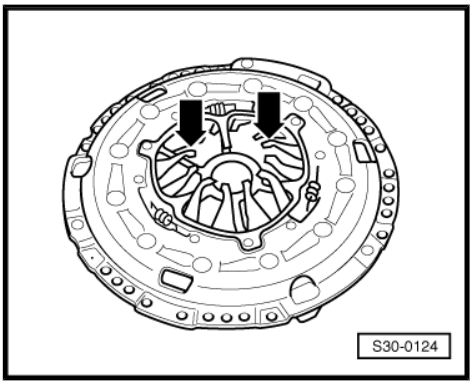



**Fitting location of clutch disc**

- Legend “side of gearbox” points to the gearbox.

**Check the extremities of the membrane springs**

- Wear is allowed up to half the membrane spring thickness -arrows-.

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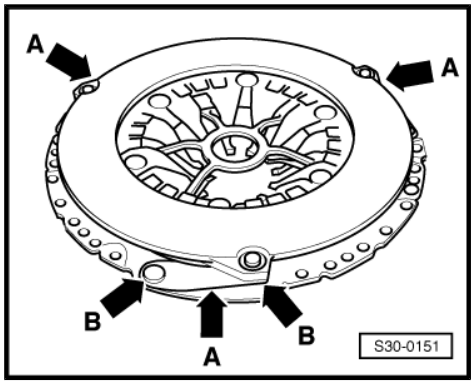
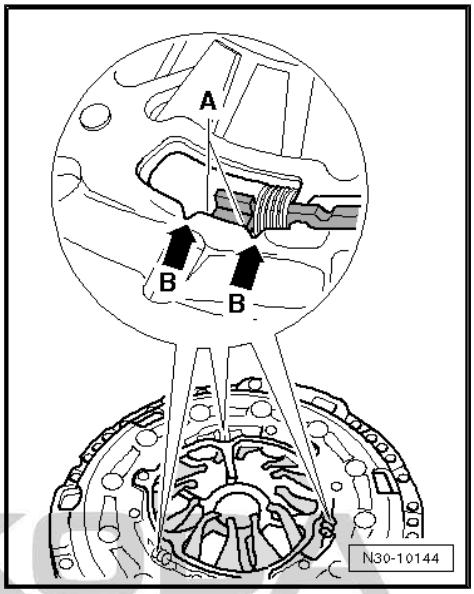
### Check feather joints and riveted joints

– Check feather joints -arrows A- for damage as well as riveted joints -arrows B- for firm seating.




### Only check the position of the resetting mechanism on new pressure plates

- Both edges -A- of the adjustment ring must be located between both notches -arrows B-.
- If the adjustment ring adopts another position when the pressure plates are new, the pressure plate and the clutch disc must not be installed.
- On used clutches the adjusting ring can also have another position outside the notches.




**Note**

- *Replace the clutch discs and pressure plates if the riveting is damaged or loose.*
- *Replace pressure plate and clutch disc together.*
- *Assign the pressure plate and clutch disc in accordance with the engine identification characters via the ⇒ Electronic catalogue of original parts .*
- *In order to reduce unpleasant odours if the clutch is burnt, thoroughly clean the clutch housing as well as the flywheel and the engine on the side of the gearbox.*
- *Clean the drive shaft serration and hub serration on used clutch discs, remove corrosion. Apply a very thin layer of grease for plug serration of clutch disc -G 000 100- onto the serration. Subsequently move the clutch disc up and down on the drive shaft until the hub fits smoothly on the shaft. Remove all excess grease.*
- *The pressure plates are protected against corrosion and are greased. Only clean the thrust surface as otherwise the life of the clutch may be considerably reduced.*
- *The thrust surface of the pressure plate and the clutch disc lining must fully rest against the flywheel. Only then may the fixing screws be inserted.*

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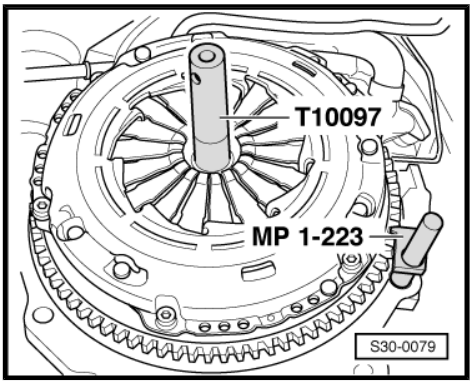
– When installing, insert the counterholder -MP1-223 (3067)- for tightening the screws.
– Place the pressure plate onto the centering pins.
– Use the centering mandrel -T10097- for centering the clutch disc.




**In order to avoid a deformation of the pressure plate when installing it (this leads to jerking during start-up), the pressure plate must be installed as follows:**

– Screw in all the screws by hand uniformly, until the bolt head rests against the pressure plate.
– Tighten the screws gradually and crosswise so as not to damage the centering holes on the pressure plate and the centering pins of the flywheel.
– Tighten all 6 screws gradually to tightening torque ⇒ Item 4 (page 46) .
– Installing the gearbox ⇒ page 97 .

## 3.5 Fault finding power transmission - problems with the clutch and clutch control

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**Note**

*Check hydraulic clutch control ⇒ page 35 .*

Before each clutch repair, examine and reconstruct the complaint of the customer. In each individual case, it must be determined if indeed there are problems with the clutch or the incorrect setting of the gearshift is cause for complaint.

| Complaint | Fault description | Measure |
|---|---|---|
| Clutch pedal does not return to initial position | ♦ Air in line system. | – Vent air from the line system; top up with brake fluid. |
| | ♦ Line system, master or slave cylinder leaking. | – Replace defective part, vent air from the line system; top up with brake fluid. |
| | ♦ Membrane spring of the pressure plate broken. | – Replace pressure plate. |

| Complaint | Fault description | Measure |
|---|---|---|
| Actuating force on the clutch pedal too high | ♦ Over-centre helper spring defective. | – Replace over-centre helper spring. |
| | ♦ Clutch release force increased due to wear of clutch linings. | – Inform customer (higher release force with increased wear).<br>– Replace clutch disc, when the distance base/rivet is below 0.1 mm. |
| | ♦ Pressure plate with wrong spring identification. | – Assign pressure plate via the ⇒ Electronic catalogue of original parts . |
| | ♦ Mechanical fault of the pressure plate/clutch disc. | – Replace defective parts. |

| Complaint | Fault description | Measure |
|---|---|---|
| | ♦ Clutch disc on the serration sluggish/jams. | – Check serration of the hub for damage (burrs), if necessary replace clutch disc.<br>– Clean the hub and the drive shaft serration from corrosion and residues of lubricant and grease with grease for plug serration of clutch disc - G 000 100- . Move clutch disc back and forth, remove excess grease. |

| Complaint | Fault description | Measure |
|---|---|---|
| Noises when operating the clutch | ♦ Release bearing of the slave cylinder defective. | – Always replace noisy release bearing/slave cylinder. |
| | ♦ Contact surface (tips of membrane spring) of the pressure plate defective (bent, broken). | – Replace pressure plate.<br>– Check release bearing, replace if necessary. |
| | ♦ Centre displacement of engine/gearbox. | – Check dowel sleeves. |
| | ♦ Clutch disc installed the wrong way up. | – Correct installation. |
| | ♦ Wrong clutch disc installed. | – Assign clutch disc via the ⇒ Electronic catalogue of original parts . |

| Complaint | Fault description | Measure |
|---|---|---|
| Scratch noises when the forward or reverse gear is engaged, gearschift jams, hooks, is sluggish, shifting not possible, clutch without operation | ♦ Air in the system, clutch does not separate fully. | – Bleed system; check system, top up with brake fluid. |
| | ♦ Master/slave cylinder, line is leaking. | – Replace defective part, top up with brake fluid, bleed system. |
| | ♦ The travel of the clutch pedal is not sufficent (carpet, foot mat under the foot controls) clutch is not fully depressed. | – Inform customer. |
| | ♦ Pressure plate uneven due to incorrect installation, clutch disc warped due to improper handling. | – Inspect parts, if necessary replace, observe position of the centering pins.<br>– If afterwards scratching still occurs, check the serration of the clutch disc on the drive shaft for ease of movement, if necessary carry out gearbox repair. |
| | ♦ Tips of membrane spring broken or bent (assembly fault). | – Replace pressure plate.<br>– Check release bearing/slave cylinder, replace if necessary.<br>– Check dowel sleeves. |

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| Complaint | Fault description | Measure |
|---|---|---|
| | ♦ Clutch disc too thick. | – Assign clutch disc via the ⇒ Electronic catalogue of original parts . |
| | ♦ Lining glued to the flywheel (long immobilization time, high humidity). | – Slightly rub down friction surfaces of the clutch linings or replace completely the severely corroded parts. |
| | ♦ Clutch disc on the serration sluggish/jams. Corroded hub, damaged during assembly. Hub profile knocked out on one side. | – Check serration of the hub for damage, if necessary replace clutch disc.<br>– Remove corrosion and traces of grease from hub and shaft. Grease shaft with grease for plug serration of clutch disc - G 000 100- .<br>– Move clutch disc back and forth, remove excess grease.<br>– Check position of dowel sleeves on knocked out hub profile.<br>– Check release bearing/slave cylinder and pressure plate, replace if necessary. |
| | ♦ Lifting of pressure plate too low (wrong pressure plate installed). | – Assign pressure plate via the ⇒ Electronic catalogue of original parts . |
| | ♦ Displacement of engine/gearbox too large (dowel sleeves missing), support panel of clutch plate bent through this. | – Insert dowel sleeves before gearbox has been fitted.<br>– Check clutch disc and pressure plate for damage, if necessary replace. |
| | ♦ Linings spalled off because of too high revs (shift back during too high speed).<br>♦ When starting, linings are spalled off through slipping for too long a time. | – Replace clutch disc. Inform customer. |

| Complaint | Fault description | Measure |
|---|---|---|
| Load change jolts when throttle is depressed and sudden reduction of the engine speed | ♦ Suspension assembly too soft. | – Inform customer. Assign hanger via the ⇒ Electronic Catalogue of Original Parts replace if necessary. |
| | ♦ Irregular engine running. | – Check engine setting, correct. |
| | ♦ Clutch disc with predamper is built in against gear rattling. | – Inform customer. |
| | ♦ Centre displacement of engine/gearbox. | – Test dowel sleeves, replace if necessary. |

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| Complaint | Fault description | Measure |
|---|---|---|
| Clutch slips through, no or bad pre-drive | ♦ Wrong clutch disc, wrong pressure plate installed. | – Assign the clutch disc and pressure plate via the ⇒ Electronic catalogue of original parts . |
| | ♦ Clutch disc worn out, burnt, pressure plate overheated, scoring, pressure plate warped through incorrect assembly, contact pressure of the pressure plate too low, driving error, natural wear. | – Replace clutch disc.<br>– Replace pressure plate.<br>– Inform customer. |
| | ♦ Clutch disc, pressure plate, flywheel oily. Shaft seals of engine or gearbox defective. Grease on the contact surfaces through excess greasing of the hub. | – Replace clutch disc.<br>– Clean contact surfaces of pressure plate and flywheel.<br>– Replace shaft seal, remove excess grease from the drive shaft. |
| | ♦ Clutch disc installed the wrong way up. | – Correct installation, check clutch disc, replace if necessary. |
| | ♦ Flywheel depth too large or excess removal at the base of the thrust surface. | – Assign the sealing flange via the ⇒ electronic catalogue of original parts .<br>– Inspect clutch disc, pressure plate, replace if necessary. |
| | ♦ Slave cylinder leaking. | – Replace slave cylinder. |

| Complaint | Fault description | Measure |
|---|---|---|
| Clutch grabbing,<br>unit shaking | ♦ Air in the system. | – Bleed system, check brake fluid level, check system for tightness.<br>– Replace defective part. |
| | ♦ Engine does not run clean. | – Check engine setting, correct. |
| | ♦ Driving error, starting speed is too low. | – Inform customer. |
| | ♦ Wrong clutch disc installed. | – Assign clutch disc via the ⇒ Electronic catalogue of original parts . |
| | ♦ Assembly bearing too soft, knocked out. | – Check assembly bearing, if necessary assign via the ⇒ Electronic Catalogue of Original Parts . |
| | ♦ Clutch lining, contact surface of pressure plate and flywheel oily (oil leakage from the clutch housing). | – Check shaft seal of the gearbox drive shaft or the crankshaft, replace if necessary.<br>– Replace clutch disc, clean pressure plate and flywheel. |

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| Complaint | Fault description | Measure |
|---|---|---|
| | ♦ The contact surface of the pressure plate lifts off only unilaterally due to the tilted release bearing of the slave cylinder.<br>♦ Housing of the pressure plate warped when installed. Contact surface of the pressure plate lifts off only unilaterally. | – Check the contact surface of the clutch lining at the flywheel, check pressure plate and membrane spring, replace pressure plate if necessary.<br>– Replace release bearing/slave cylinder. |
| | ♦ Drive schaft too heavily greased (traces of grease on the clutch disc, pressure plate and flywheel). | – Clean pressure plate and flywheel free of grease, replace in the event of damage (rattle markings, traces of overheating, scoring).<br>– Remove traces of grease from hub and shaft, grease shaft with grease for plug serration of clutch disc -G 000 100- .<br>– Move clutch disc back and forth, remove excess grease. |

| Complaint | Fault description | Measure |
|---|---|---|
| Acoustic knock “klack” when coupling | ♦ Carrier earth/drive shaft is accelerated with sudden coupling. The drive shaft serration of the pinions in mesh knocks; for clutch discs with predamper the noise increases as the predamper reaches the stop. | – Inform customer. |

| Complaint | Fault description | Measure |
|---|---|---|
| Noises in idle | ♦ Torsional damper spring broken. | – Replace clutch disc. |
| | ♦ Clutch disc without predamper installed (idle rattling). | – Assign clutch disc via the ⇒ Electronic catalogue of original parts . |
| | ♦ Pressure plate warped, broken, imbalance. | – Replace pressure plate. |
| | ♦ Irregular engine running. | – Check engine setting, correct if necessary. |
| | ♦ Displacement of engine/gearbox too large (dowel sleeves missing). | – Insert dowel sleeves before gearbox has been fitted. |
| | ♦ Intermediate plate grinds at flywheel. | – Insert intermediate plate on sealing flange and push onto the dowel sleeves. |

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# 34 – Control, housing

## 1 Repairing shift mechanism

### 1.1 Fitting location of shift mechanism

-Arrow A- Shift movement

-Arrow B- Selector movement

A - Shift cable

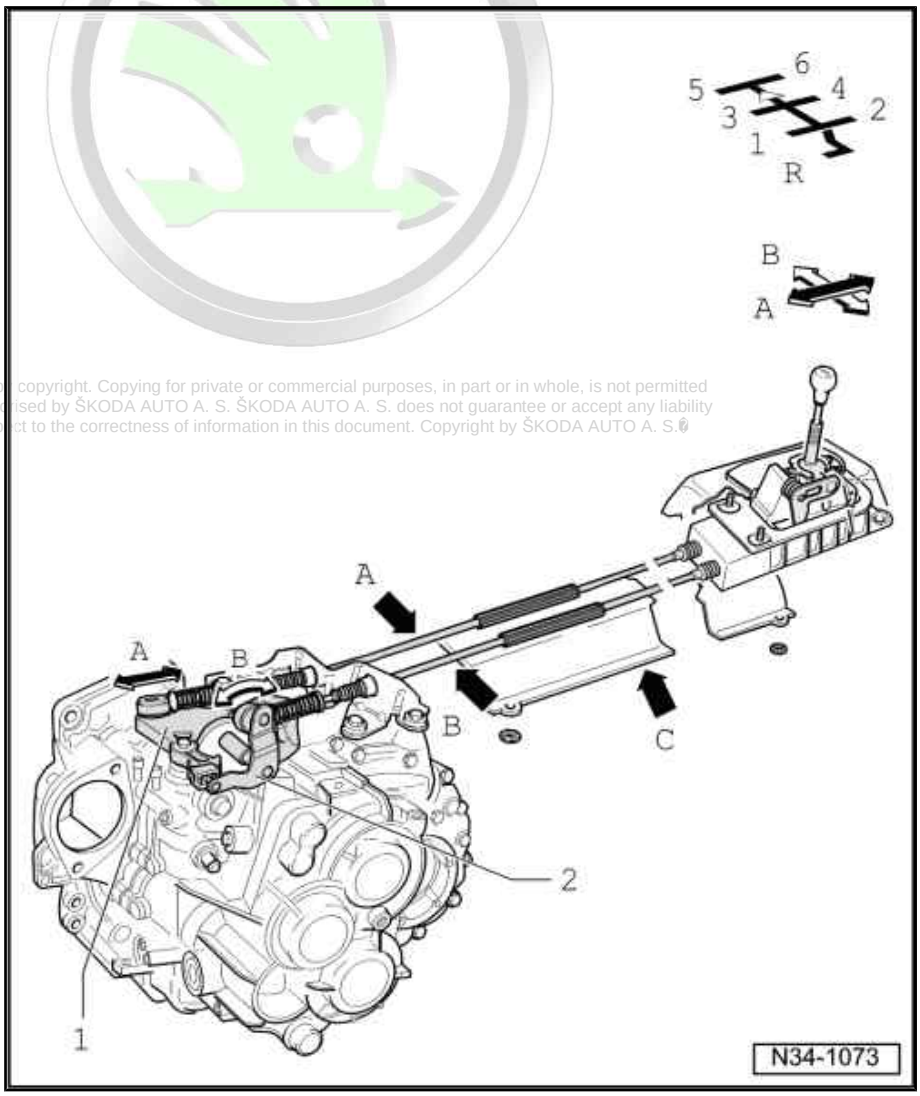
B - Selector cable

C - Heat shield

- ❑ take off before removing the shift mechanism

1 - Gearshift lever

2 - Reversing lever

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## 1.2 Summary of components

**Note**

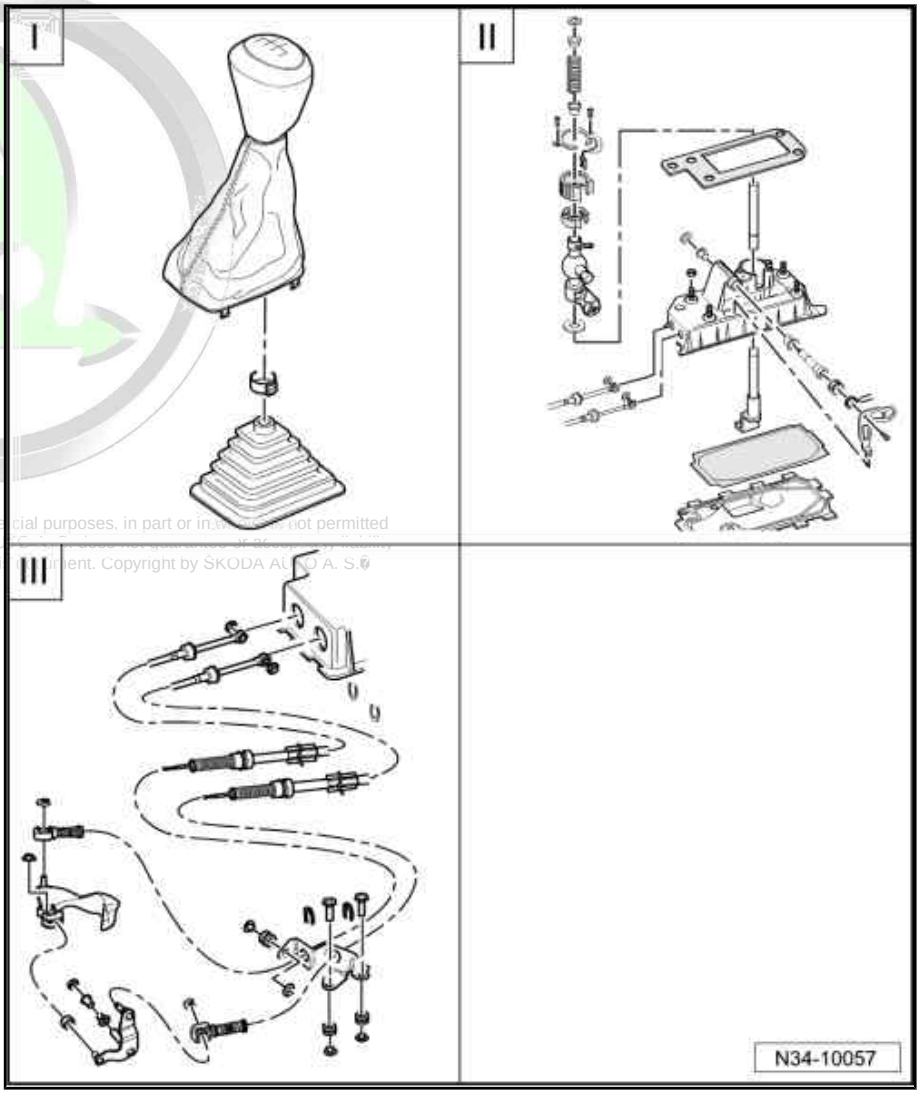
- *After the battery earth strap is disconnected and connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*
- *Remove shift mechanism for replacing control cables ⇒ page 71 .*
- *Do not kink the control cables.*

I - Summary of components - Gearshift knob with shift lever collar ⇒ page 56 .

II - Summary of components - Gearshift mechanism (up to 10.06) ⇒ page 57

II - Summary of components - Gearshift mechanism (as of 11.06) ⇒ page 60

III - Summary of components - Control cables ⇒ page 65 .

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# 1.3 Summary of components - gearshift knob and cover

**1 - Gearshift knob**

- ❑ with collar
- ❑ The gearshift knob and collar can be separated from each other on certain vehicles:

- ♦ for the removal, carefully press off the clamping sleeve using a screwdriver
- ♦ for the installation, press the clamping sleeve onto the gearshift knob/collar and lock in place
  - ❑ Plaque of gearshift lever can only be separated from the gearshift knob e.g. with a screwdriver.
  - ❑ Assignment ⇒ Electronic Catalogue of Original Parts
  - ❑ removing and installing ⇒ page 57

**2 - Collar**

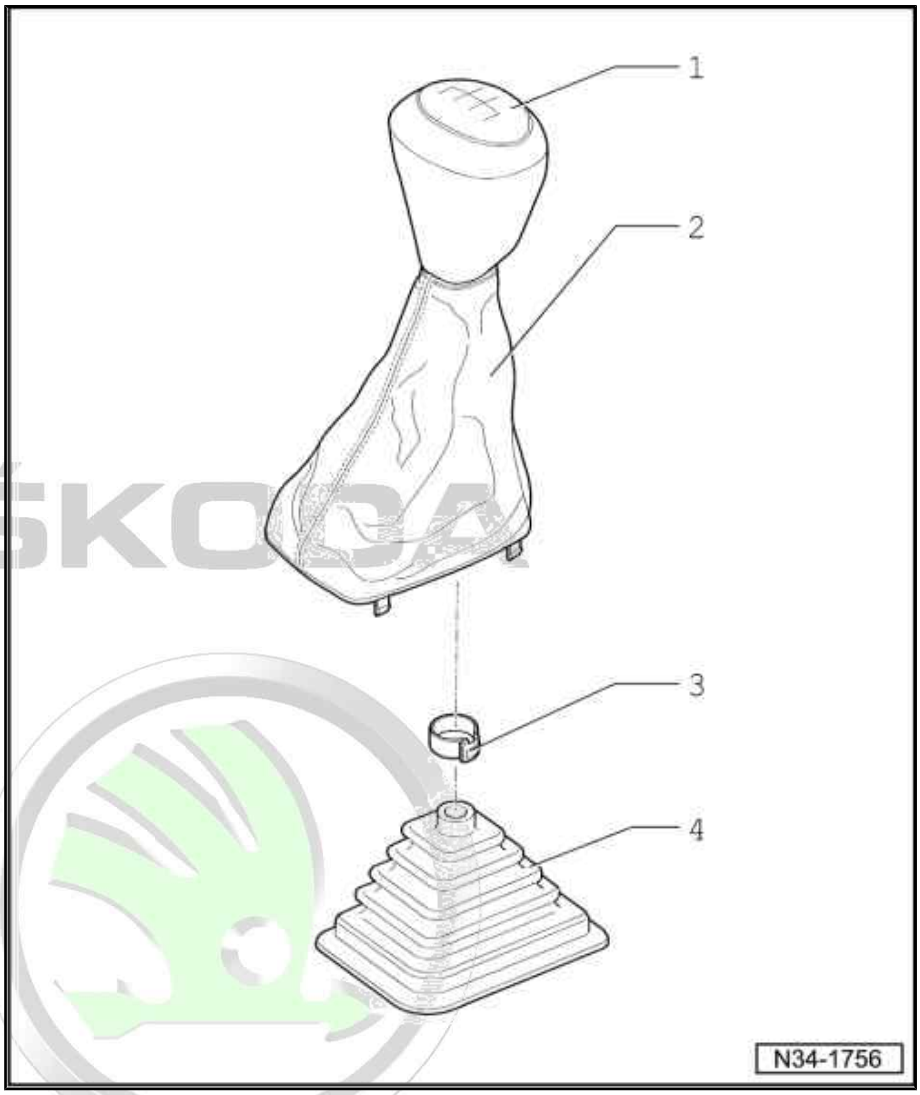
- ❑ can be separated from the gearshift knob on certain vehicles
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

**3 - Open warm-type clamp**

- ❑ for securing the gearshift knob to the gearshift lever
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**4 - Noise insulation**

- ❑ not fitted to all vehicles
- ❑ Catch pegs are positioned at different distances.
- ❑ therefore can only be inserted in one position.

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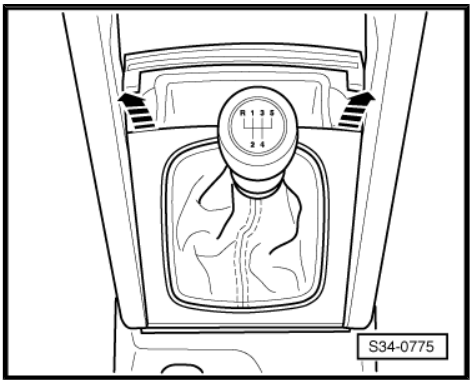
## 1.4 Remove and install gearshift knob and cover

– Lever the collar upwards and out of centre console surround -arrows-.

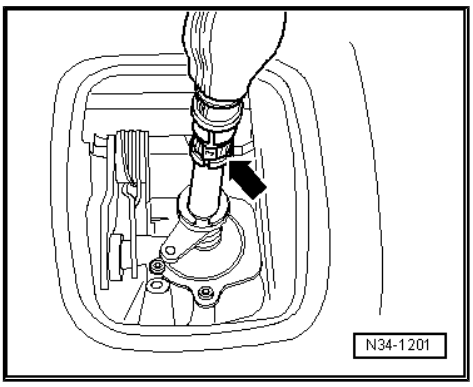



**Note**

*To do so, the release tool -T30098- can be used.*

– Pull the collar upwards over the gearshift knob.

– Open clamp -arrow- and pull off gearshift knob together with the collar.




**Install**

– Turn collar inside out.

– Insert gearshift knob and collar and compress new collar clamp -arrow-.

When inserting the gearshift knob on the shift lever the gearshift knob must lock into the round slot of the gearshift lever.

## 1.5 Summary of components - Gearshift mechanism (up to 10.06)

**Note**

*Grease bearing and friction surfaces with grease -G 000 450 02- .*

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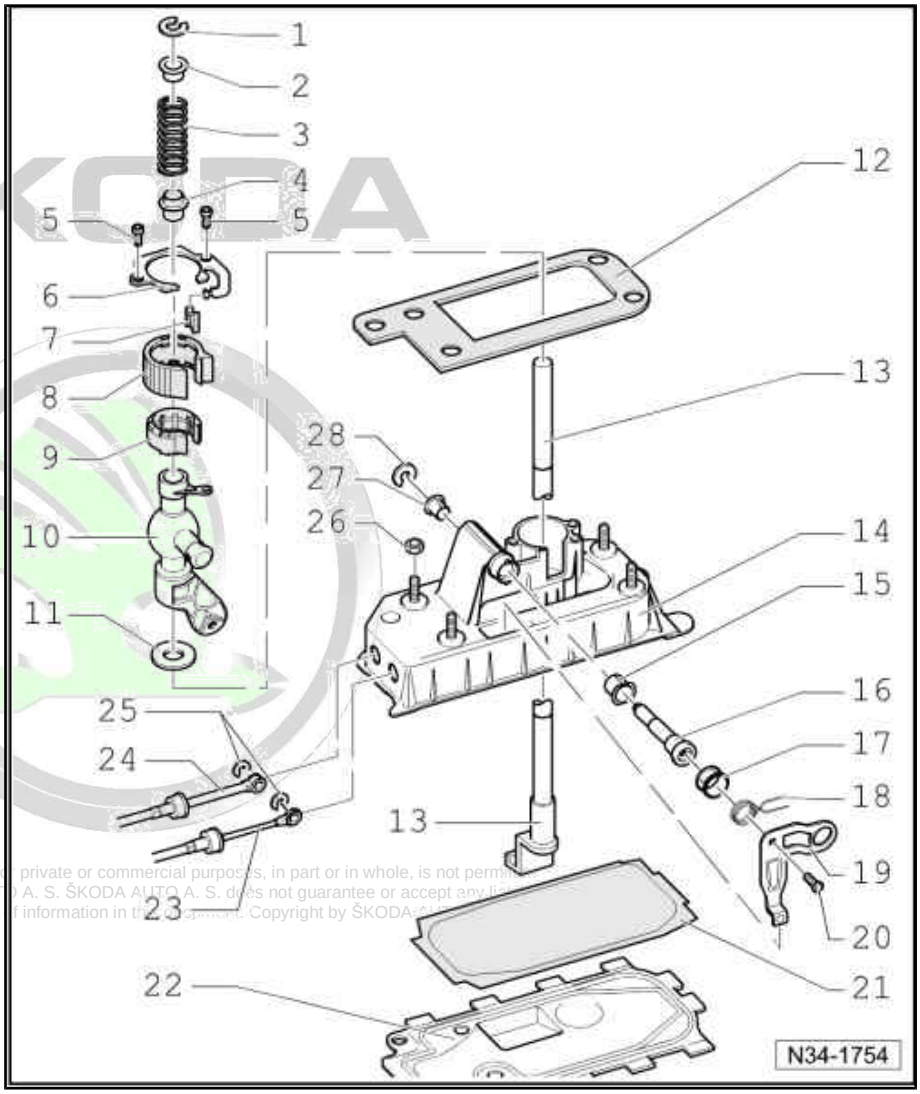


**1 - Lock washer**
- ❑ removing and installing ⇒ page 59

**2 - Bushing**

**3 - Spring**

**4 - Bushing**

**5 - 5 Nm**

**6 - Cover**

**7 - Damping**

**8 - Damping**

**9 - Bearing shell**

**10 - Shift lever guide**

**11 - Insulating washer**

**12 - Gasket**
- ❑ between shift housing and underbody
- ❑ self-adhesive
- ❑ stick onto shift housing

**13 - Shift lever**

**14 - Shift housing**

**15 - Bushing**

**16 - Bearing bolt**

**17 - Guide bushing**

**18 - Spring**
- ❑ installing ⇒ page 59

**19 - Selector angle plate**

**20 - 5 Nm**

**21 - Gasket**
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**22 - Floor plate**
- ❑ bend up tabs for removing
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**23 - Selector cable**
- ❑ removing and installing ⇒ page 75
- ❑ detaching and attaching at selector angle plate ⇒ page 59

**24 - Shift cable**
- ❑ removing and installing ⇒ page 75
- ❑ remove from the shift lever guide pos. 10 ⇒ page 59

**25 - Lock washer**
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**26 - 8 Nm**
- ❑ 4 pieces

**27 - Bushing**
- ❑ fits in one position only

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### 28 - Lock washer

❑ always replace ⇒ Electronic Catalogue of Original Parts

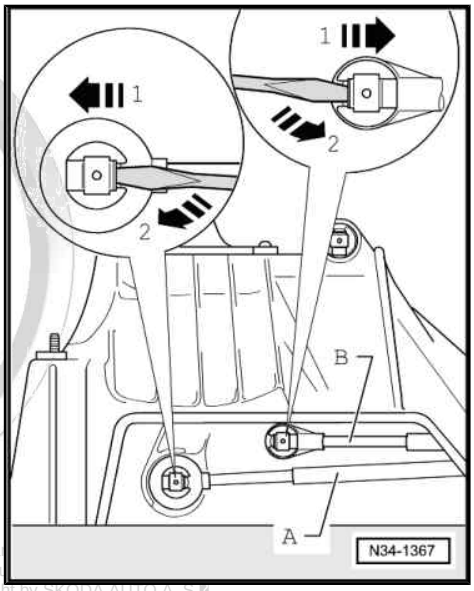
### Detaching and attaching selector cable and shift cable

– Remove lock washer from shift cable -A- and selector cable -B-.

To do so lift the tab with a screwdriver -arrow 1- and press off lock washer -arrow 2-.

– Remove shift cable -A- from the support of the gearshift lever.

– Remove selector cable -B- from the support of the selector angle plate.

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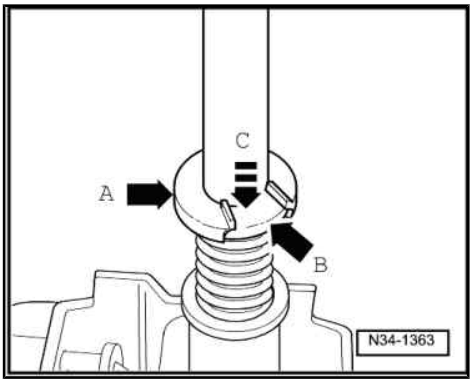
### Removing and installing lock washer

– To remove and install the circlip -arrow A- press bushing -arrow B- with a screwdriver up to the stop in the direction of the arrow -arrow C- and remove circlip.



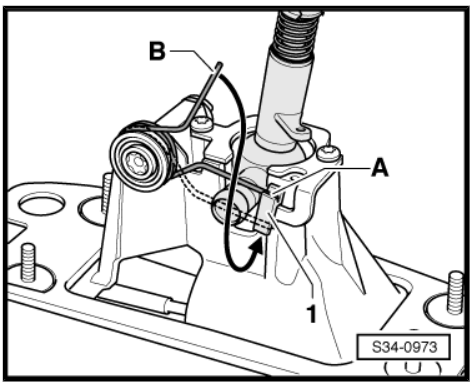

**Note**

- *Do not twist bushing when pressing down.*
- *Mounting slot in shift lever for lock washer must be visible.*
- *Release spring carefully.*

### Install pressure spring

– Insert the clamp -A- of the pressure spring from the top into the guide -1-.

– Press the clamp -B- of the pressure spring downwards and insert from the bottom into the guide.



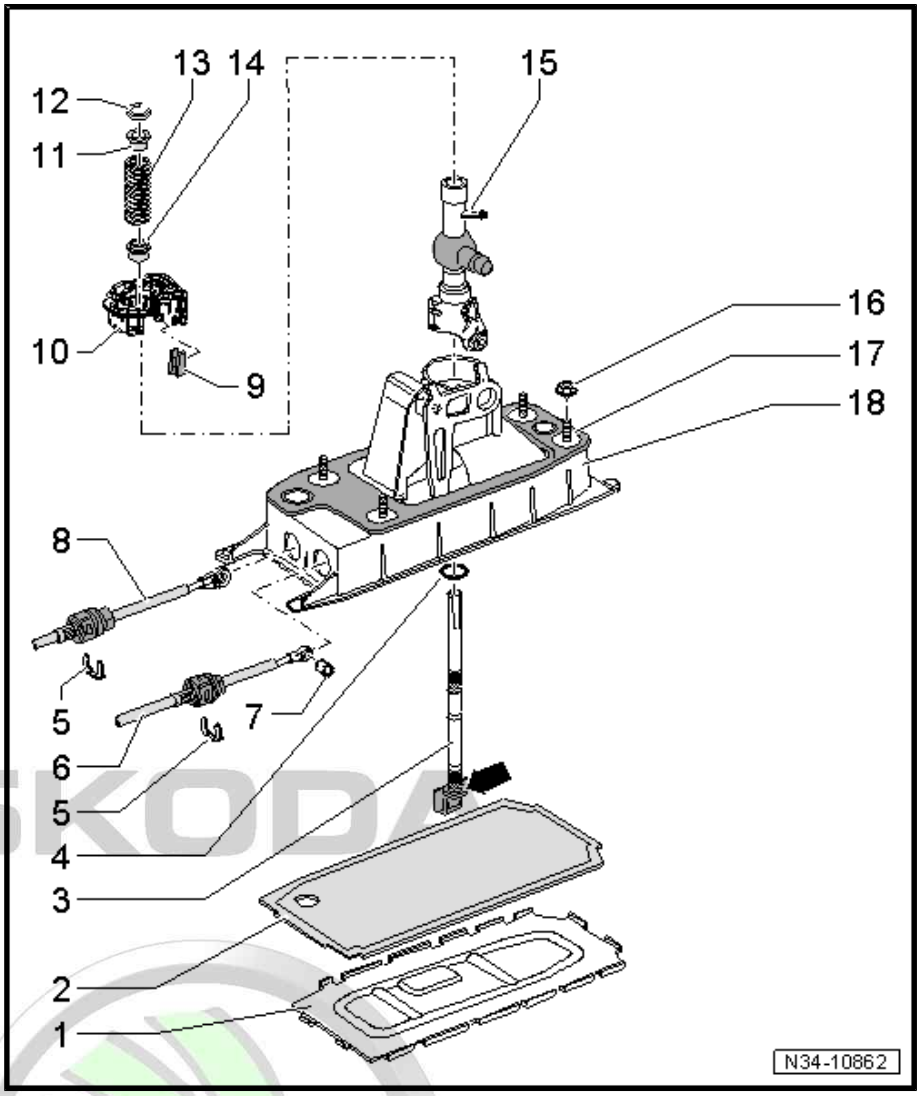

**Note**

*The illustration shows without the removed selector angle plate.*

## 1.6 Summary of components - Gearshift mechanism (as of 11.06)

**Note**

*Grease bearing and friction surfaces with grease -G 000 450 02- .*




**1 - Floor plate**

- ❑ bend up tabs for removing
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**2 - Gasket**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**3 - Shift lever**

- ❑ can be installed or removed with the shift lever guide pos. 15 mounted

**4 - Insulating washer**

- ❑ push up to the stop -arrow- onto the shift lever

**5 - Lock washer**

- ❑ do not damage cables when removing
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**6 - Selector cable**

- ❑ lever off from selector angle plate
- ❑ press onto the selector angle plate within the shift mechanism
- ❑ removing and installing ⇒ page 75
- ❑ Fitting position ⇒ page 54
- ❑ adjust ⇒ page 77

**7 - Bush for selector cable**

**8 - Shift cable**

- ❑ lever off from the shift lever guide
- ❑ press onto the shift lever guide within the shift mechanism
- ❑ removing and installing ⇒ page 75
- ❑ Fitting position ⇒ page 54
- ❑ adjust ⇒ page 77

**9 - Damping**

- ❑ removing and installing ⇒ page 61

**10 - Bearing shell**

- ❑ is damaged when removing.

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- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**11 - Bushing**

**12 - Lock washer**

- ❑ removing and installing ⇒ page 61

**13 - Spring**

- ❑ removing and installing ⇒ page 61

**14 - Bushing**

**15 - Shift lever guide**

**16 - Nut**

- ❑ M8 = 25 Nm
- ❑ M6 = 8 Nm
- ❑ 4 pieces

**17 - Gasket**

- ❑ between shift housing and underbody
- ❑ self-adhesive
- ❑ stick onto shift housing

**18 - Shift housing**

- ❑ with pressure spring and selector angle
- ❑ Pressure spring and selector angle cannot be removed

### Removing and installing lock washer

– Hold the gearshift lever -2-.

– Press the bushing -3- in the direction of the arrow.

– Remove lock washer -1-.

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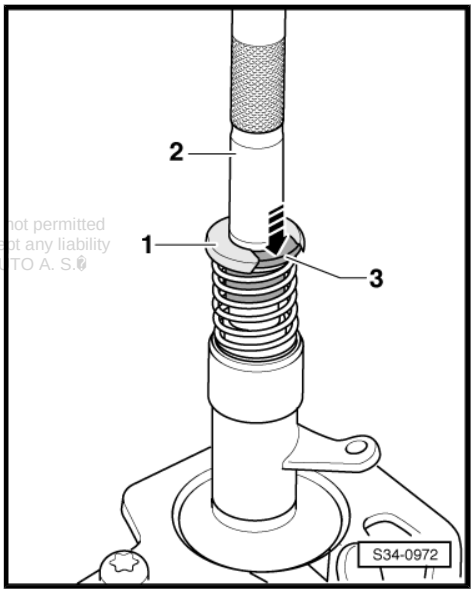
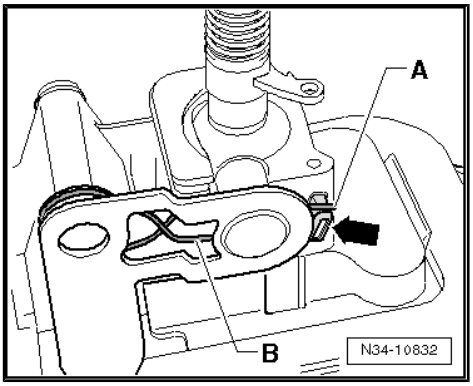



### Removing and installing damping -arrow-

– Press the pressure spring leg -A- to the left until it is located next to the damping -arrow-.

– Press the shift lever to the lift and pull off the damping.

• After installing the damping, the pressure spring legs -A- and -B- must rest on the damping -arrow-.



# 1.7 Disassembling and assembling the gearshift mechanism (as of 11.06)

**Special tools and workshop equipment required**

- Insert base -T10083-
- Grease -G 000 450 02-

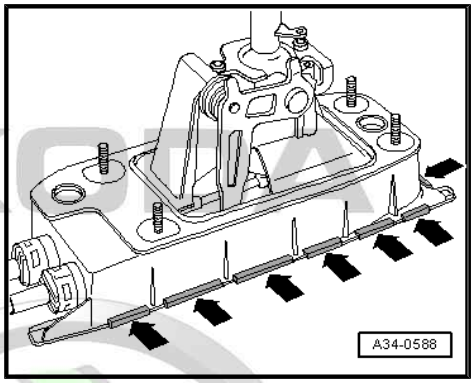
## 1.7.1 Dismantling

– Removing shift mechanism ⇒ page 71 .

– Bend up the tabs -arrows- of the floor plate for shift mechanism with a screwdriver and remove the floor plate; (the tabs in the front area of the floor plate are not shown in the illustration).

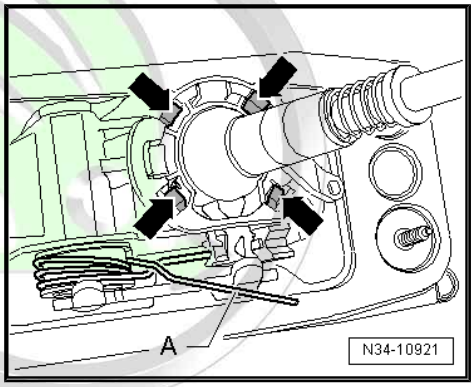
– Remove gasket from shift housing.

– Remove shift cable and selector cable from the shift housing ⇒ page 60 .



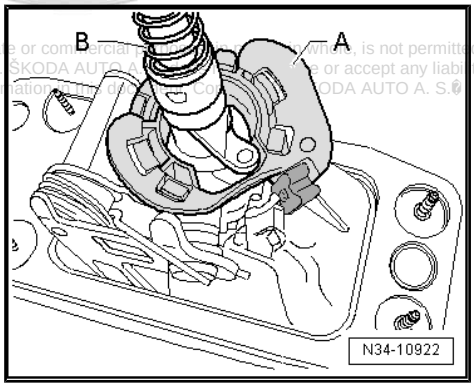

– Lift the upper leg -A- of the pressure spring over the tabs of the selector angle.

– Use a screwdriver to press the catches -arrows- of the bearing shell in direction of the bearing ball for the shift lever guide; if necessary break off the catches -arrows-.




– Lever bearing shell -A- with shift lever guide and shift lever -B- out of the shift housing.

– Then press the bearing shell off the bearing ball for the shift lever guide and remove.

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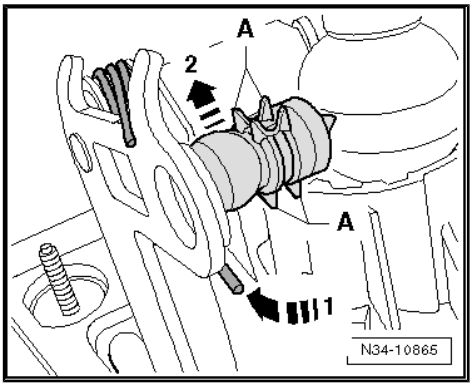
- During further work procedure observe the guides -A-.
- The guides -A- must not break off.

– Lever the lower leg of the pressure spring up to the stop onto the shoulder at the selector angle plate -direction of arrow 1-.

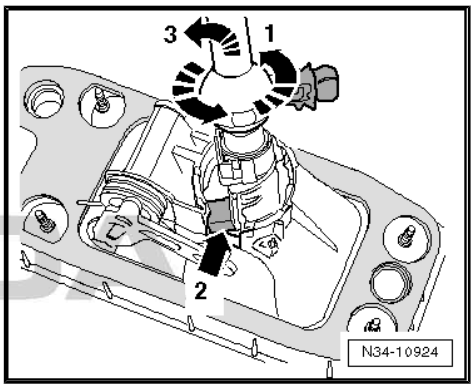
– Now pull up the shift lever guide as far as the stop and pull the ball stud out of the selector angle plate -direction of arrow 2-.




– Then turn the shift lever guide in -direction of arrow 1-.

- The stud -arrow 2- must be located in the recess of the shift housing.

– Afterwards, swivel out the shift lever guide with shift lever in -direction of arrow 3-.




## 1.7.2 Assembling together

**Caution**

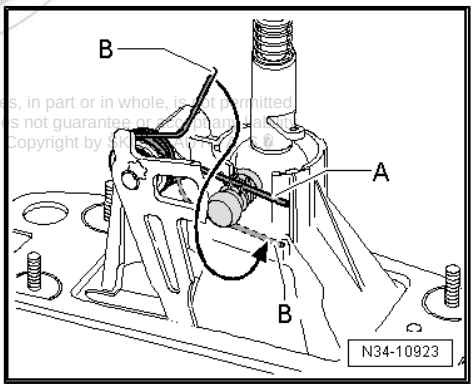
*The lower leg of the pressure spring ( ⇒ page 63 ) can jump off uncontrolled from the shoulder of the selector angle during further handling.*

– Thus carefully press down the lower leg from the shoulder of the selector angle plate.

The legs of the pressure spring tighten “crosswise” with a loud noise

– To slacken, turn around the legs of the pressure spring -A- and -B- towards the right.

- The legs -A- and -B- must point in the opposite direction (shown here for inserted shift lever guide).

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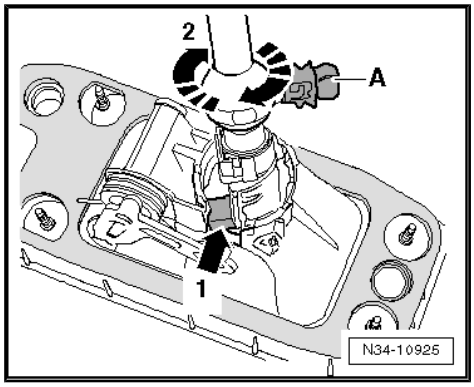
– Insert shift lever guide with shift lever into the shift housing.

• The stud -arrow 1- is still located in the recess of the shift housing.

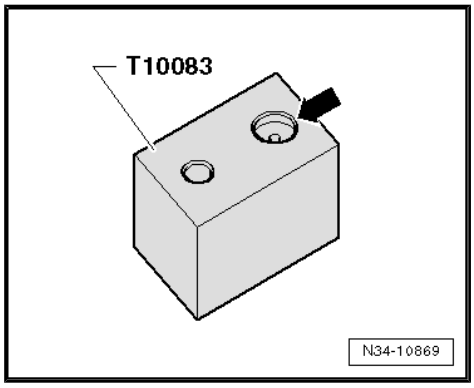
– Turn shift lever guide in -direction of arrow 2-, until the ball stud -A- is above the recess of the shift housing.




– Position shift housing with shift lever guide into the larger recess -arrow- of the Insert base -T10083- .

**Note**

*If necessary, first of all remove the shift lever so that the shift housing with shift lever guide can be inserted in the insert base .*



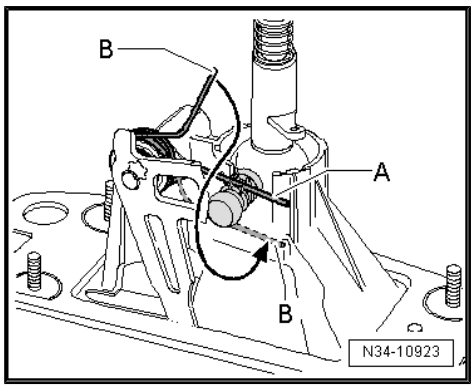

• The shift lever guide must protrude out of the shift housing as far as the stop.

– Insert the leg -A- of the pressure spring from the top into the guide.

– Pull leg -B- of pressure spring downwards and insert the leg -B- next to the guide (in direction of the spherical head).

**Note**

*To provide a clearer illustration, only the selector angle plate is partially illustrated.*



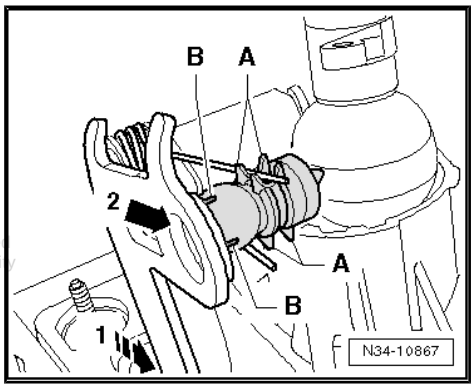

– Carefully remove shift housing with shift lever guide from the insert base -T10083- .

– Move selector angle plate up to stop to the rear (opposite the location holes for shift and selector cable) -direction of arrow 1-.

– Grease the ball stud with grease -G 000 450 02- .

– Press the ball stud into the selector angle plate -arrow 2-.

• The guides -A- and the tabs -B- must not be damaged.

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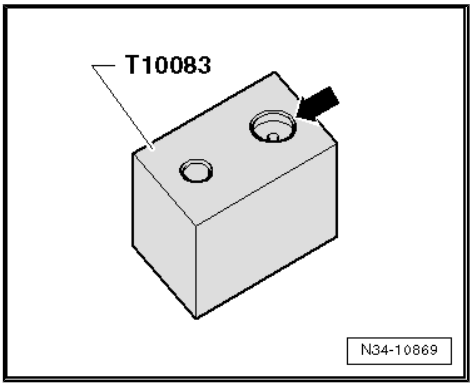
– Position shift housing with shift lever guide into the larger recess -arrow- of the Insert base -T10083- .




• The shift lever guide must protrude out of the shift housing as far as the stop.

– Lift the upper leg -A- of the pressure spring over the stud of the selector angle plate.

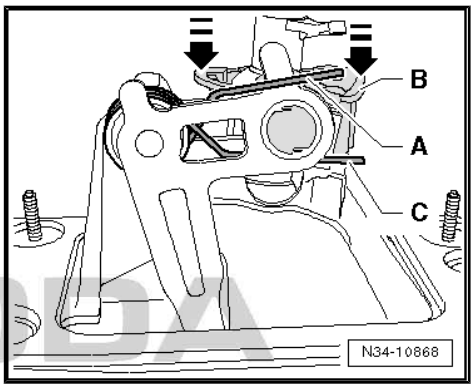
• Use a new bearing shell -B-.

– Grease the bearing shell and the bearing ball of the shift lever guide with grease -G 000 450 02- .

– Press the bearing shell up to stop onto the bearing ball of the shift lever guide.

– Remove shift housing from the insert base -T10083- .

– Press the bearing shell into the shift housing -arrows-.




• All catch pegs must click audibly.

– Insert the lower leg -C- of the pressure spring into the guide.

– Lift the upper leg -A- of the pressure spring over the stud of the selector angle plate into the guide.

**Note**

*If the shift lever was removed, install the shift lever ⇒ page 60 .*

– Mount shift cable, selector cable and floor plate ⇒ page 75 .

– Installing shift mechanism ⇒ page 71 .

## 1.8 Summary of components - Control cables

**Note**

*Grease bearing and friction surfaces with grease -G 000 450 02- .*

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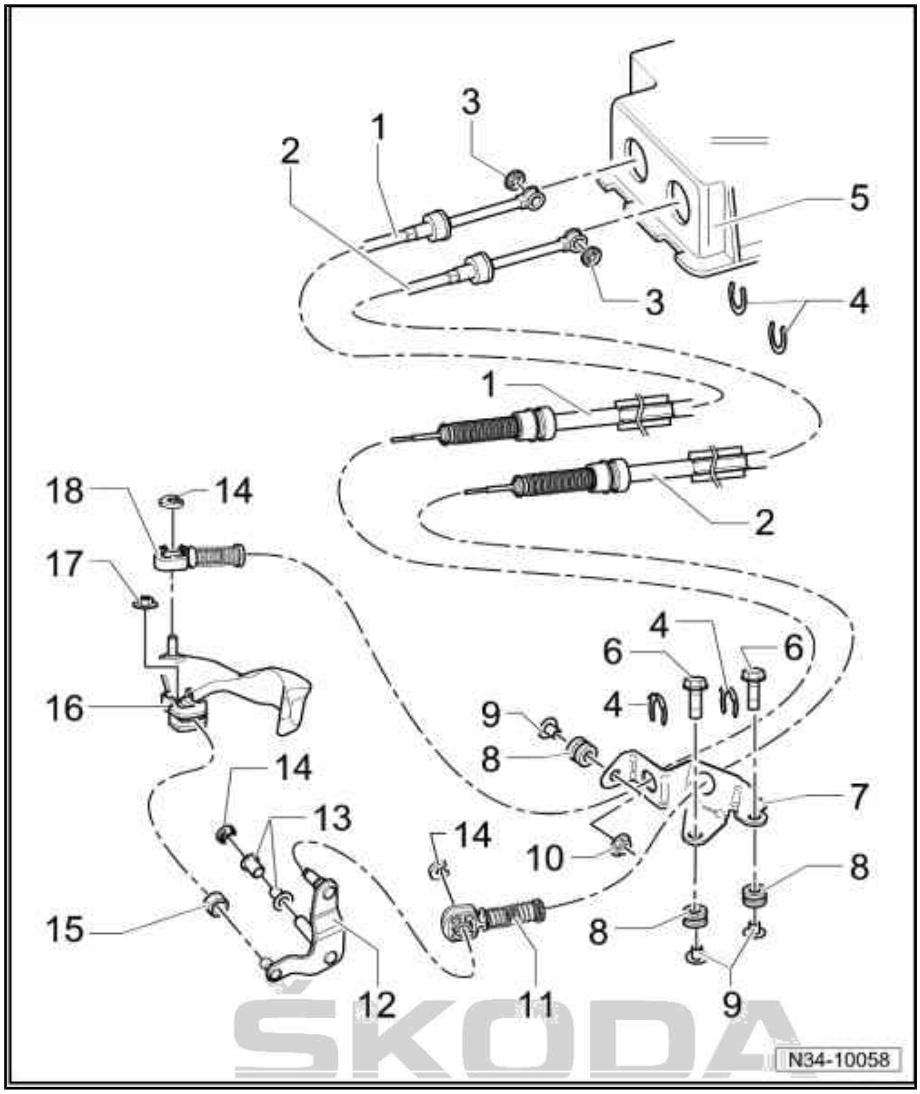


**1 - Shift cable**

- ❑ connect with cable lock Pos. 18
- ❑ removing and installing ⇒ page 75
- ❑ Fitting position ⇒ page 54
- ❑ as of 11.06 modified attachment to the gear-shift lever within the shift mechanism ⇒ page 60
- ❑ after installing set shift mechanism ⇒ page 77

**2 - Selector cable**

- ❑ connect with cable lock Pos. 11
- ❑ removing and installing ⇒ page 75
- ❑ Fitting position ⇒ page 54
- ❑ as of 11.06 modified attachment to the selector angle plate within the shift mechanism ⇒ page 60
- ❑ after installing set shift mechanism ⇒ page 77

**3 - Lock washer**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ no longer applicable ⇒ page 60 for shift mechanisms as of 11.06

**4 - Lock washer**

- ❑ do not damage cables when removing
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**5 - Shift housing**

**6 - 20 Nm**

- ❑ 2 pieces
- ❑ for cable support
- ❑ replace ⇒ Electronic Catalogue of Original Parts

**7 - Cable support**

- ❑ made out of plastic or metal

**8 - Grommet**

- ❑ Mounting of cable support to gearbox

**9 - Spacer**

**10 - 20 Nm**

- ❑ for cable support

**11 - Cable lock**

- ❑ for selector cable at relay lever

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- ❑ do not interchange, cable locks for selector cable at relay lever and for shift cable at gearshift lever are different
- ❑ after installing set shift mechanism ⇒ page 77
- ❑ as of 06.07 it is fitted together with plastic relay lever ⇒ page 70
- ❑ remove from plastic relay lever ⇒ page 70
- ❑ press onto plastic relay lever ⇒ page 70
- ❑ Assignment ⇒ page 68

**12 - Reversing lever**

- ❑ Fitting position ⇒ page 68
- ❑ after installing set shift mechanism ⇒ page 77
- ❑ made out of plastic or metal
- ❑ Metal relay lever is located in the bushings pos. 13 and secured with a lock washer pos. 14
- ❑ as of 06.07 plastic relay lever ⇒ page 70
- ❑ remove and install plastic relay lever together with cable lock ⇒ page 70
- ❑ Bushings pos. 13 and lock washer pos. 14 are not required for plastic relay lever

**13 - Bushing**

- ❑ is not required for plastic relay lever

**14 - Lock washer**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ is not required for plastic relay lever

**15 - Sliding shoe**

**16 - Gearshift lever**

- ❑ with balancing weight
- ❑ insert in such a way that the interrupted spacing of the teeth matches the gearshift shaft
- ❑ after installing set shift mechanism ⇒ page 77
- ❑ Fitting position ⇒ page 68
- ❑ as of 06.06 smaller diameter of the mounting pin for the cable lock ⇒ page 68

**17 - 23 Nm**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**18 - Cable lock**

- ❑ for shift cable at gearbox shift lever
- ❑ after installing set shift mechanism ⇒ page 77
- ❑ do not interchange, cable locks for selector cable at relay lever and for shift cable at gearshift lever are different
- ❑ Assignment ⇒ page 68

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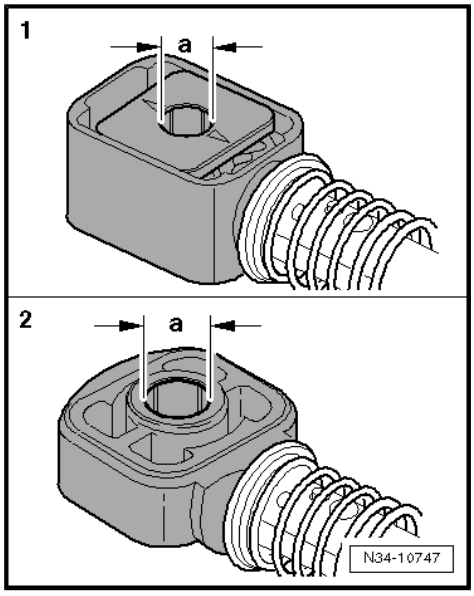
### Assignment of the cable locks

The holes in the cable locks have different diameters.

| Cable lock for: | Dimension “a” |
|---|---|
| 1. - Shift cable at gearbox shift lever as of 06.06 | 8.5 mm |
| 2. - Shift cable at gearbox shift lever up to 05.06 | 10 mm |
| 2. - Selector cable at metal relay lever | 8 mm |
| 2. - Selector cable at plastic relay lever ⇒ page 70 | 10 mm |




### As of 06.06 smaller diameter of the mounting pin for the cable lock of the shift cable

| Mounting pin for the cable lock of the shift cable | Dimension “a” |
|---|---|
| to 05.06 | 10 mm |
| from 06.06 | 8.5 mm |

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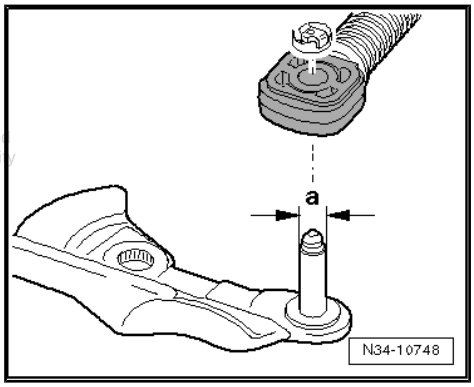
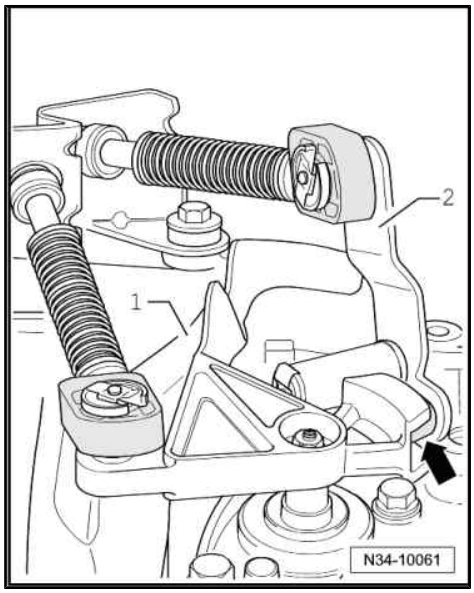



### Fitting location of gearbox shift lever/relay lever

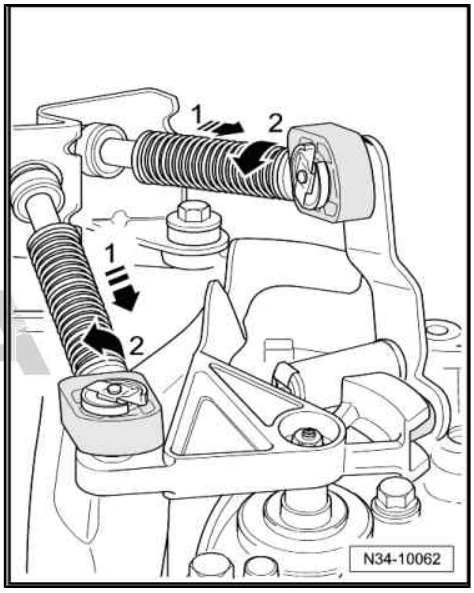
1 - Gearbox shift lever with balancing weight

2 - Relay lever is inserted over the sliding shoe -arrow- into the sliding rail of the gearbox shift lever



## 1.8.1 Replace cable lock

– Pull forward the locking mechanism at selector cable and at shift cable as far as the stop -direction of arrow 1-, then lock by turning to the left -direction of arrow 2-.




– Remove circlip -3- for shift cable from gearbox shift lever -1-.

– Pull off shift cable from the stud -arrow-.

**Metal relay lever**

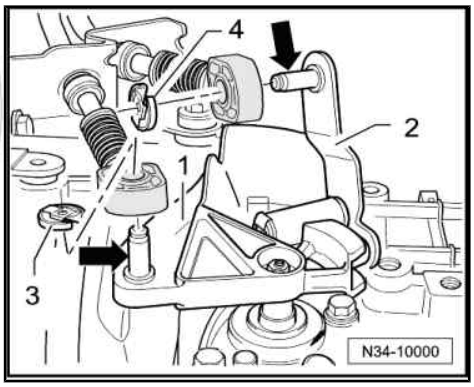
– Remove circlip -4- for the selector cable from relay lever -2-.

– Pull selector cable off the stud.

**Plastic relay lever**

– Remove relay lever together with cable lock ⇒ page 70 .

– Lever off cable lock from relay lever ⇒ page 70 .




**Continued for all gearshift mechanisms**

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– Apply a small quantity of grease -G 000 450 02- onto the studs -arrows- of the gearbox shift lever -1- and of the relay lever -2-.

– Replace circlip -3- and circlip -4- for the metal relay lever after each disassembly.

– Secure the shift cable with the lock washer -3- and secure the selector cable with the lock washer -4- for metal relay lever.

**Note**

*If a plastic relay lever is installed, it must be mounted together with the cable lock ⇒ page 70 .*

Setting the shift mechanism ⇒ page 77 .

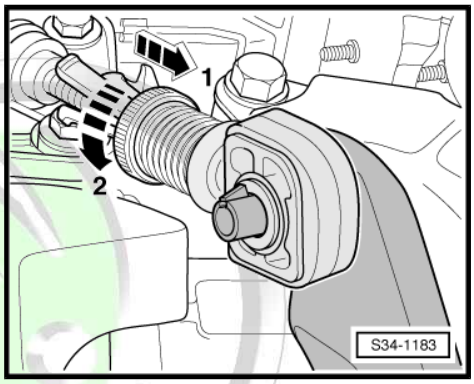
# 1.9 Plastic relay lever

## 1.9.1 Removing and installing the plastic relay lever

– Pull forward the locking mechanism as far as the stop in -direction of arrow 1-, then lock by turning to the left in -direction of arrow 2-.

• In order to avoid damage to the selector cable, the cable lock must be separated from the selector cable before removal.

• Gearbox shift lever is located in the neutral position.

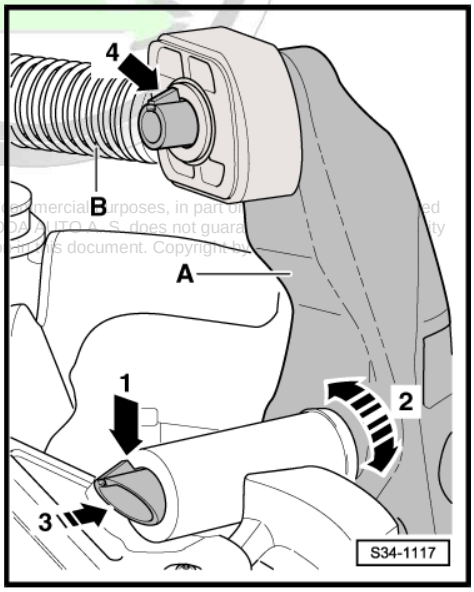



**The relay lever is secured with a catch -arrow 1- in the cover**

– Carefully press down the catch -arrow 1- up to the stop.

– Afterwards move the relay lever -A- back and forward in its bearing point (direction of operation) -arrow 2-. To do so, carefully pull out the relay lever -A- together with the cable lock -B- in -direction of arrow 3-.

• Only remove the cable lock -B- on removed relay lever ⇒ page 71 .

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**Note**

♦ *To install, grease bearing points and friction surfaces with grease -G 000 450 02- .*

♦ *Press cable lock onto the relay lever* *⇒ page 71* .

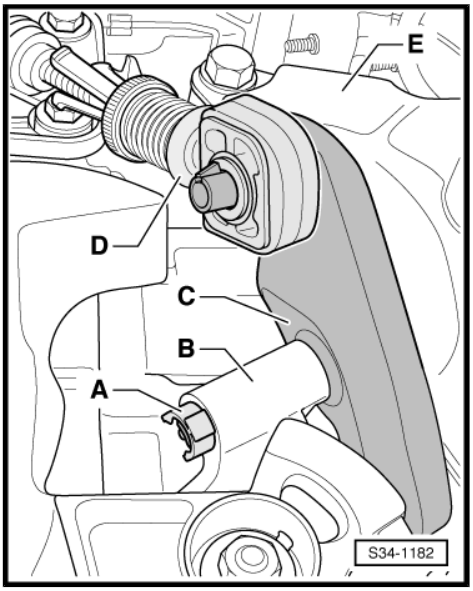
♦ *Insert relay lever together with cable lock.*

• The catch -arrow 1- secures the relay lever.

• The cable lock -B- must be located behind the catch -arrow 4-.

**The relay lever is secured with a clip -A- in the cover**

– Detach the clip -A- and remove the relay lever -C- together with the cable lock -D-.




**Note**

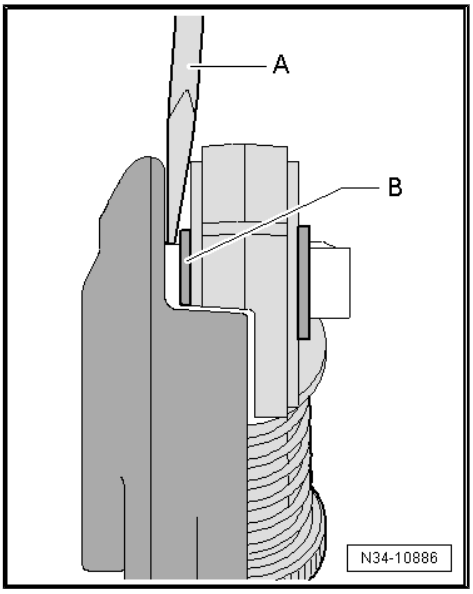
- *To install, grease bearing points and friction surfaces with grease -G 000 450 02- .*
- *Press cable lock onto the relay lever* ⇒ page 71 .
- *Insert relay lever together with cable lock.*
- *Secure the relay lever with a clip -A-.*

## 1.9.2 Removing and installing the cable lock for selector cable from the plastic relay lever

**Lever off cable lock for selector cable from plastic relay lever**

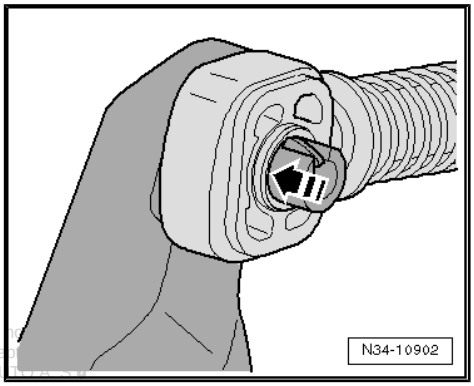
- The relay lever is removed.

– Position a cross-head screwdriver -A- between the bush -B- and the relay lever.




**Press on cable lock**

- The relay lever is removed.
- The cable lock must only be pressed onto the bush -arrow-.
- The cable lock must move freely on the relay lever.
- It must be located behind the catch ⇒ page 70 .

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## 1.10 Removing and installing shift mechanism

## 1.10.1 Removing

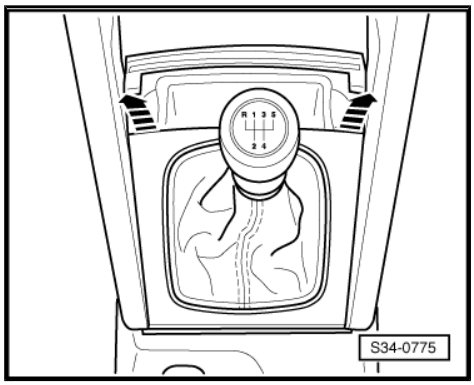
**Special tools and workshop equipment required**

♦ Grease -G 000 450 02-

**Note**

*If the battery earth strap is disconnected and connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*

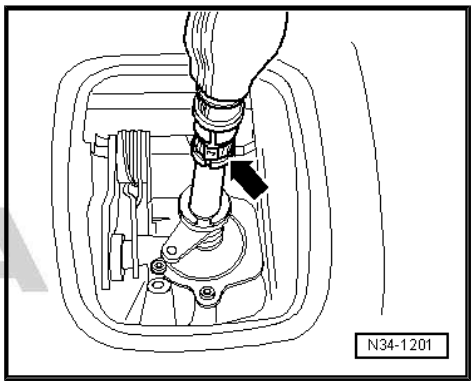
– Disconnect the battery-earth strap with the ignition off ⇒ Electrical System ⇒ Rep. Gr. 27 .
– Lever the collar upwards and out of centre console surround -arrows-.



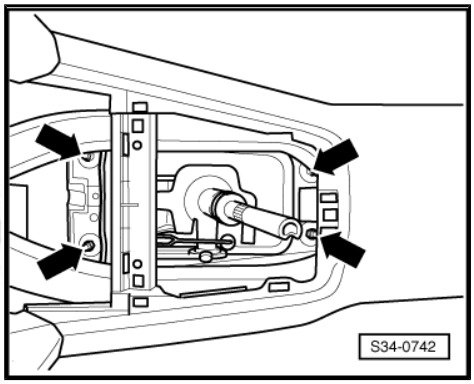

**Note**

*To do so, the release tool -T30098- can be used.*

– Open clamp -arrow- and pull off gearshift knob together with the collar.
– If present, detach the noise insulation.
– Remove the ashtray ⇒ Body Work ⇒ Rep. Gr. 68 .




– Unscrew nuts -arrows- attaching the shift housing.
– Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .

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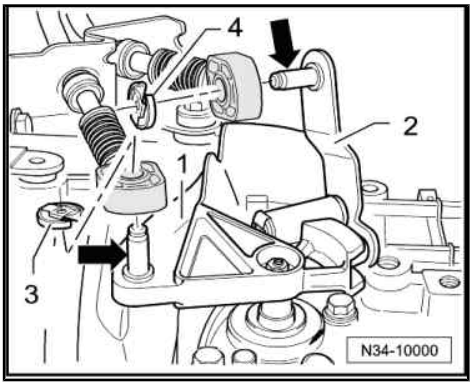
– Remove circlip -3- for shift cable from gearbox shift lever -1-.
– Pull off shift cable from the stud -arrow-.

**Metal relay lever**

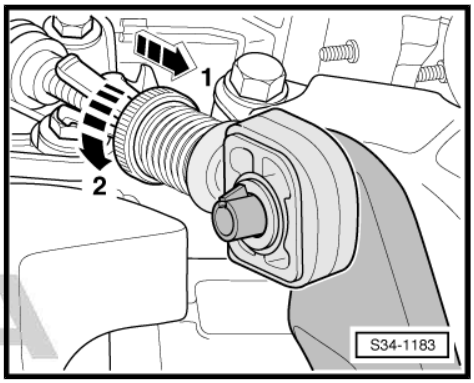
– Remove circlip -4- for the selector cable from relay lever -2-.
– Pull off selector cable from the stud -arrow-.




**Plastic relay lever**

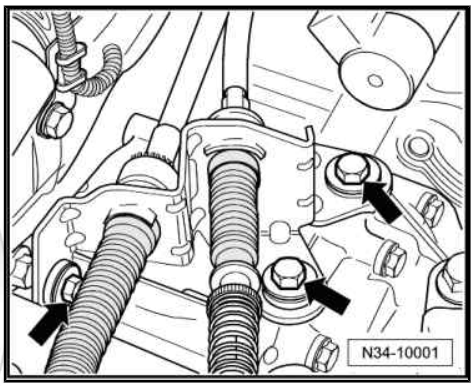
In order to avoid damage to the selector cable, the cable lock must be separated from the selector cable before removal.

– Pull forward the locking mechanism as far as the stop in -direction of arrow 1-, then lock by turning to the left in -direction of arrow 2-.
– Remove the plastic relay lever together with the cable lock ⇒ page 70 .

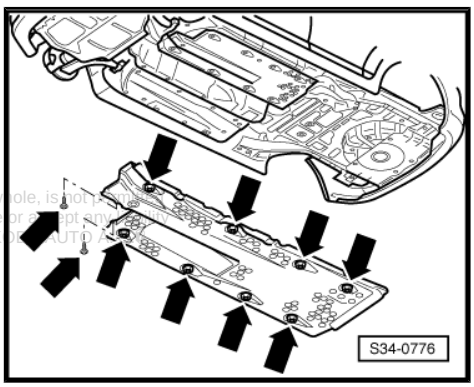



**Continued for all gearshift mechanisms**

– Disconnect the Bowden cable support from gearbox -arrows-.
– If present, remove the sound dampening system ⇒ Body work ⇒ Rep. Gr. 50 .




– Remove underbody cover on right and left -arrows-.

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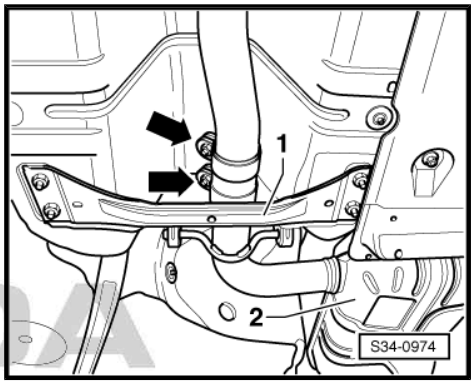
– Detach tunnel bridges -1- below the exhaust system ⇒ Engine ⇒ Rep. Gr. 26 .
– Separate exhaust system at the clamping sleeve -arrows- and remove from the assembly carrier ⇒ Engine ⇒ Rep. Gr. 26 .
– Support the front exhaust pipe.



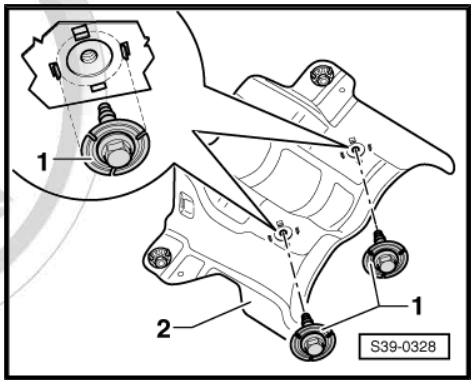

**Note**

*The decoupling elements in the exhaust pipe should not be bent by more than 10° - risk of damage.*

– Unhook the rear silencer -2- from the retaining straps.

**For vehicles with four-wheel drive**

– If necessary remove pre-exhaust pipe.
– Remove the rear part of the exhaust gas system ⇒ Engine ⇒ Rep. Gr. 26 .
– Unscrew heat shield -2- for propshaft.
– Remove propshaft ⇒ page 223 .




**For all vehicles**

– Remove the heat shield below the shift housing.
– Swivel shift housing down and remove with control cables.

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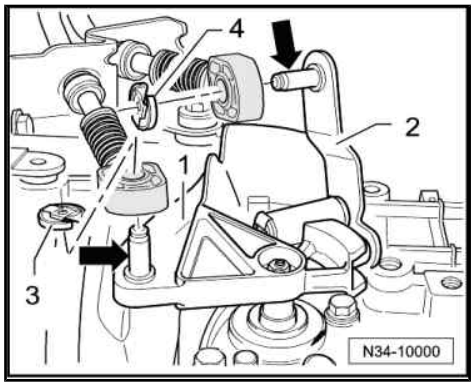
## 1.10.2 Install

Installation is performed in the reverse order, pay attention to the following points:

The holes in the cable locks have different diameters.

**Assignment of the cable locks ⇒ page 68 .**




– Apply a small quantity of grease -G 000 450 02- onto the studs -arrows- of the gearbox shift lever -1- and of the relay lever -2-.
– Replace circlips -3- and circlip -4- for the metal relay lever after each disassembly.
– Secure the shift cable with the lock washer -3- and secure the selector cable (for metal relay lever) with the lock washer -4-.

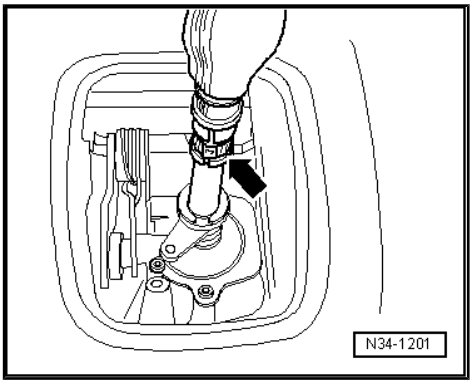
**Cable lock with plastic relay lever**

– The relay lever and the cable lock must be mounted together ⇒ page 70 .
– Insert the selector cable into the cable lock.

**Continued for all gearshift mechanisms**

– Align shift housing parallel to vehicle body.
• The distance to the vehicle body must be the same on both sides.
– Install the ashtray ⇒ Body Work ⇒ Rep. Gr. 68 .

– Replace clamp -arrow-.




**For vehicles with four-wheel drive**

– Install propshaft ⇒ page 223 .

**For all vehicles**

– Assemble exhaust system free of stress and attach tunnel bridges ⇒ Engine ⇒ Rep. Gr. 26 .
– Install underbody cover on right and left ⇒ Body Work ⇒ Rep. Gr. 50 .
– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
– Setting the shift mechanism ⇒ page 77 .
– Install air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .

**Note**

*After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*

– Connect earth strap of battery while paying attention to the notes in the ⇒ Electrical System ⇒ Rep. Gr. 27 .

**Tightening torques**

| Component | Nm |
|---|---|
| Shift housing to body | ⇒ page 57 and ⇒ page 60 |
| Cable support to gearbox | ⇒ page 65 |
| Underbody cover | ⇒ Body Work ⇒ Rep. Gr. 50 |

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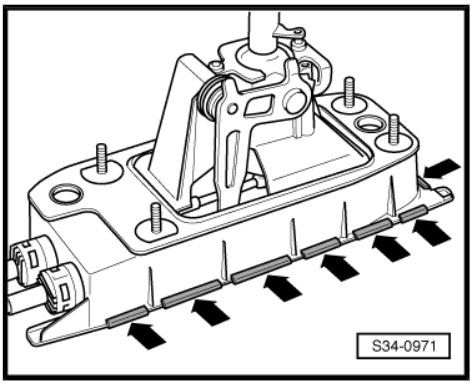
## 1.11 Removing and installing shift cable and selector cable

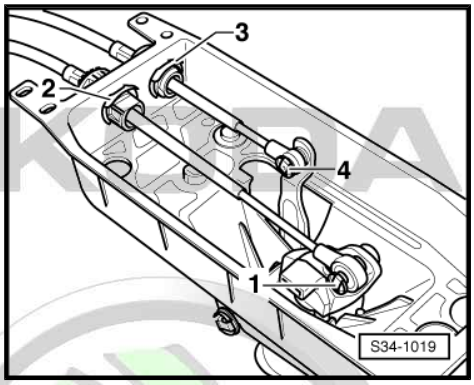
### 1.11.1 Removing

– Removing shift mechanism ⇒ page 71 .
– Bend up tabs -arrows- of cover for the shift mechanism using a screwdriver and remove cover.
– Remove gasket ring.

**Vehicles up to 10.06**

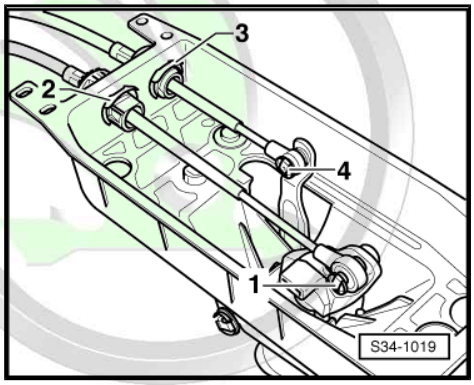


– Remove circlips -1,2,3,4- and remove shift cable and selector cable from shift housing.




**Vehicles as of 11.06**

– Remove lock washers -2 and 3- (lock washers -1 and 4- are no longer available), selector cable and shift cable must be levered off from the shift lever or selector lever e.g. with a screwdriver.

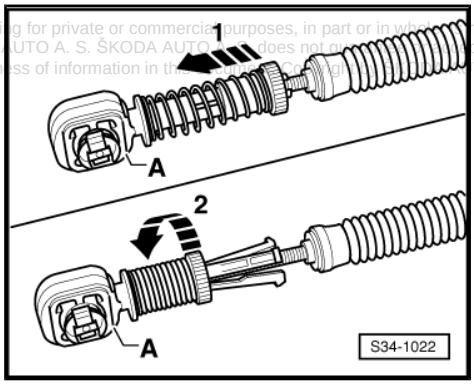



**Continued for all vehicles**

– Remove shift cable and selector cable from shift housing.

Unlock catches -A- for shift cable and selector cable as follows:

– Slide sliding sleeve forwards up to the stop -arrow 1-.
– Turn sliding sleeve to the right up to the stop -arrow 2- until it locks audibly.
– Remove the catches from the cables.

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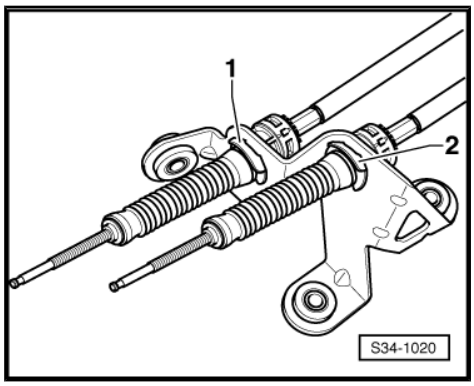
– Remove circlips -1- and -2-.
– Remove the cable support from the cables.



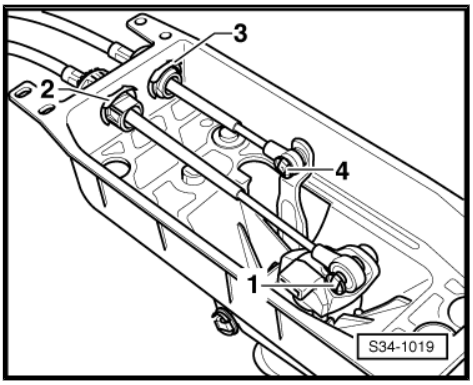

## 1.11.2 Install

Installation is performed in the reverse order, pay attention to the following points:

**Vehicles up to 10.06**

– Attach shift cable and selector cable to shift housing with circlips -2 and 3-.

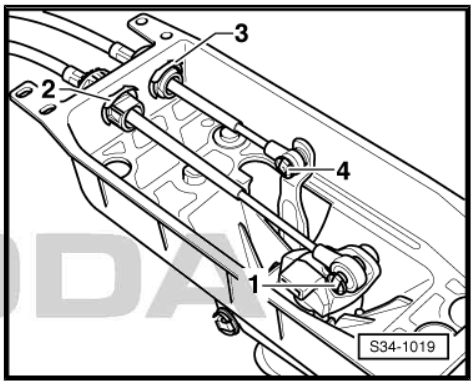
– Fasten shift cable and selector cable onto shift lever and selector lever into shift housing with lock washers -1 and 4-.




**Vehicles as of 11.06**

– Attach shift cable and selector cable to shift housing with circlips -2 and 3-.

– Press shift cable and selector cable onto shift lever and selector lever into shift housing (lock washers -1 and 4- are no longer available).

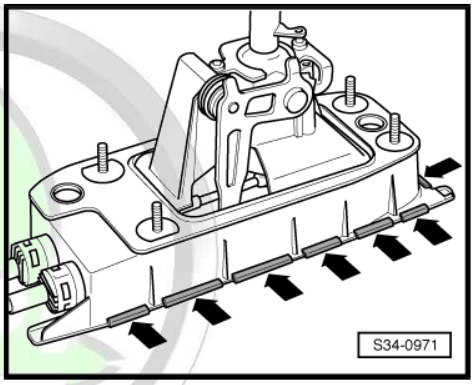



**Continued for all vehicles**

– Install gasket and attach cover for shift mechanism by pressing on the tabs -arrows-.

– Installing shift mechanism ⇒ page 71 .

– Setting the shift mechanism ⇒ page 77 .




## 1.12 Setting the shift mechanism

**Special tools and workshop equipment required**

♦ Rig pin -T10027A-

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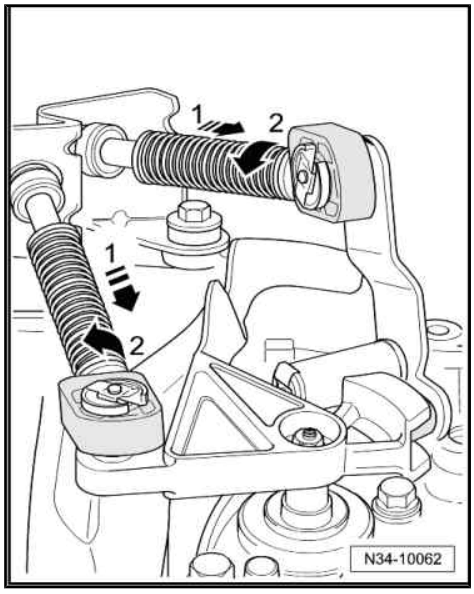
**Note**

*The following are required for correct setting of the shift mechanism:*

- Gearbox, clutch and clutch control in perfect condition
- Shift mechanism operates freely
- Control element and transmission elements of the shift mechanism are in perfect condition
- Gearbox in Neutral

– Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .

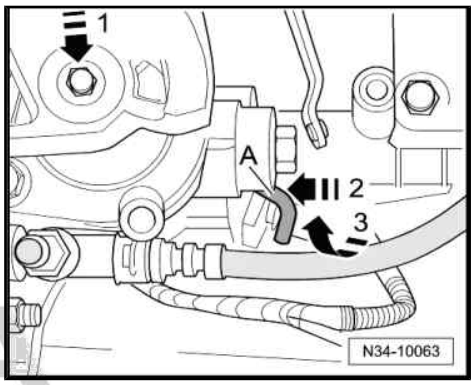
– Pull forward the locking mechanism at shift cable and at selector cable as far as the stop in -direction of arrow 1-, then lock by turning to the left in -direction of arrow 2-.



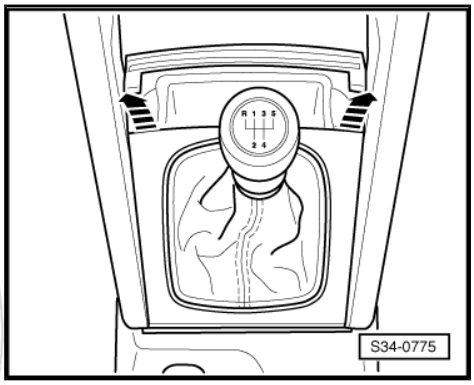

Fix the gearshift shaft as follows:

– Press down the gearshift shaft in -direction of arrow 1-.

– When pressing down the gearshift turn the angle lever -A- in -direction of arrow 3- upwards and while doing so press it simultaneously in -direction of arrow 2-, until it locks into the gearshift shaft.




– Lever the collar upwards and out of centre console surround -arrows-.




**Note**

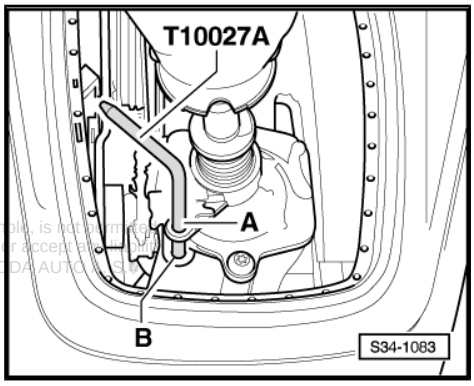
*To do so, the release tool -T30098- can be used.*

– If present, remove the noise insulation.

Now fix the gearshift lever as follows:

– Engage Neutral on gearshift lever.

– Insert rig pin -T10027A- through hole -A- into hole -B-.

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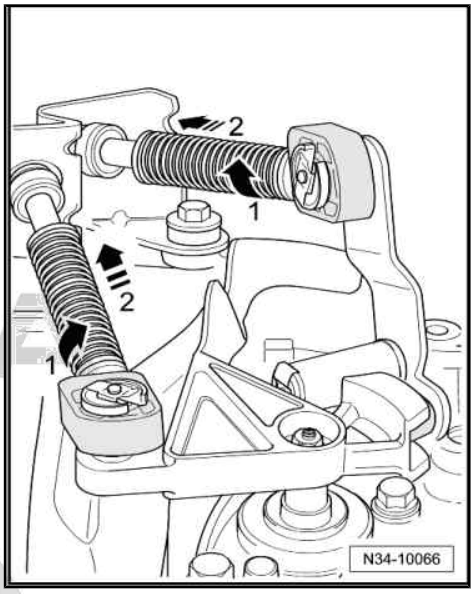
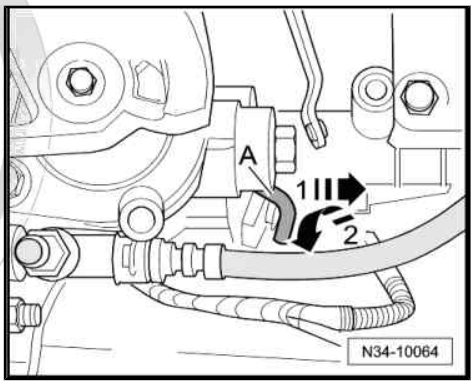
– Turn locking mechanism at shift cable and at selector cable to the right up to the stop in -direction of arrow 1-.

The spring pushes the locking mechanism into the initial position -direction of arrow 2-.

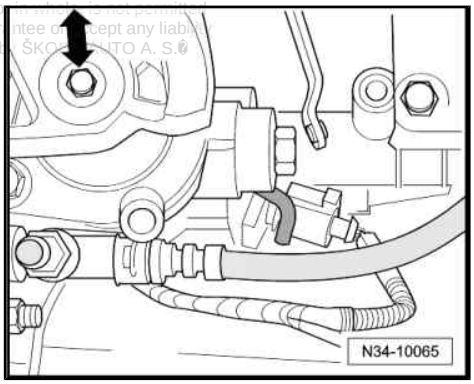



– Turn angle lever -A- back to the initial position -in direction of arrow 2-.

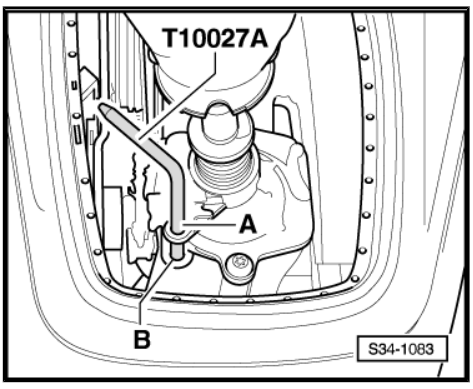
The angle lever -A- must be pressed out of the gearbox in -direction of arrow 1-.




The gearshift shaft must now move in the -direction of the arrow-.




– Pull rig pin -T10027A- out of hole -A- and -B-.
– If present, install the noise insulation.
– Press collar into the cover.
– Install air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .

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## 1.12.1 Operation

- Shift lever must be positioned in Neutral in the selector lever gate of the 3rd/4th gear.

– Actuate clutch pedal.

– Shift through all gears several times. Pay particular attention to proper operation of the reverse gear lock.

If a gear catches when engaged again, set the shift mechanism once again ⇒ page 77 .

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# 2 Removing and installing the gearbox

## 2.1 Removing gearbox - Front-wheel-drive

**Special tools and workshop equipment required**

- Adapter -MP3-419/40 (VW 771/40)-
- Gearbox attachment device -MP3-478 (3336)-
- Hose clamps -MP7-602 (3094)-
- Supporting device -T30099-
- Washer -T30099/1-
- Gearbox mount -3282-
- Adjusting plate -3282/33-
- Engine and gearbox jack e.g. -V.A.G 1383A-

– Remove engine cover ⇒ engine ⇒ Rep. Gr. 10 .

**Note**

- *All cable straps which are detached or cut open when removing, should be fitted on again in the same place when installing.*
- *After the battery earth strap is disconnected and connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*

– Disconnect the battery-earth strap with the ignition off ⇒ Electrical System ⇒ Rep. Gr. 27 .

– Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .

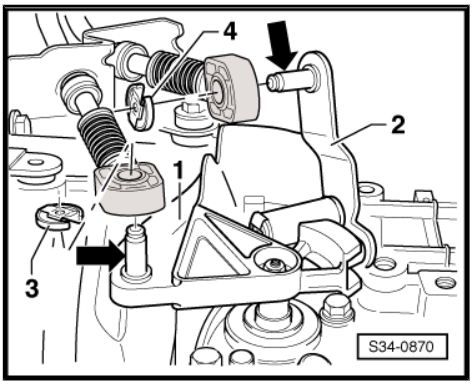
– Remove battery and battery tray ⇒ Electrical System ⇒ Rep. Gr. 27 .

– Remove the cooling water tank cover ⇒ Body Work ⇒ Rep. Gr. 66 .

– Remove lock washer -3- for shift cable from gearbox shift lever -1- and pull off the shift cable from the stud -arrow-.

**Metal relay lever**

– Remove lock washer -4- for selector cable from relay lever -2- and pull off the selector cable from the stud -arrow-.

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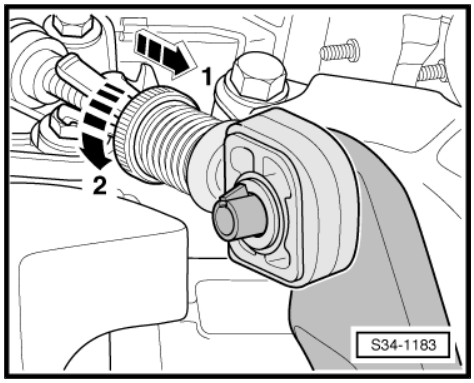
**Plastic relay lever**

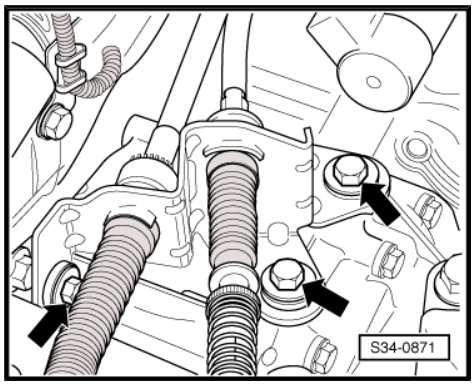
- In order to avoid damage to the selector cable, the cable lock must be separated from the selector cable before removal.

– Pull forward the locking mechanism as far as the stop in -direction of arrow 1-, then lock by turning to the left in -direction of arrow 2-.




**Continued for all vehicles:**

– Disconnect cable support from gearbox -arrows-, lay aside and tie up.

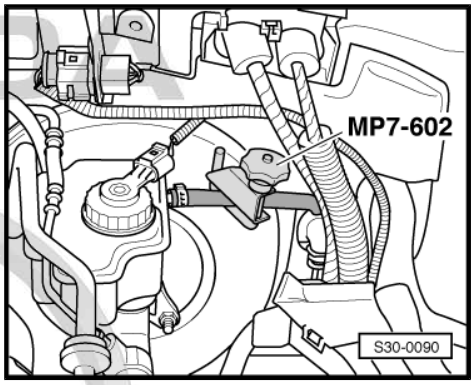



**A tube-hose line or a plastic line is fitted between the master cylinder and the bleeder.**

**Note**

*When performing the following work, make sure that no brake fluid comes into contact with the frame side rail or the gearbox. If this is the case, these points must be cleaned thoroughly.*

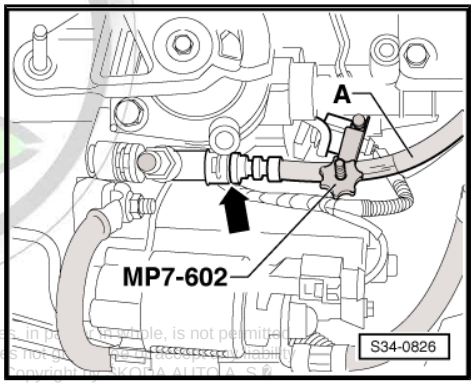
– If a plastic line is fitted, then the return hose must be removed at the master cylinder and closed in a suitable manner (do not use hose clamp -MP7–602- ).




– If a tube-hose line is fitted, pinch off the hose for the tube-hose line -A- to the master cylinder with the hose clamp -MP7-602 (3094)- (do not use the hose clamp -MP7–602- for the plastic line -A-).

– Pull out retaining clip -arrow- for tube-hose line and/or plastic line up to the stop.

– Pull out the tube-hose line and/or plastic line from the bleeder/ slave cylinder and close in a suitable manner.




**Caution**

***After removing the tube-hose line, do not operate the clutch pedal.***

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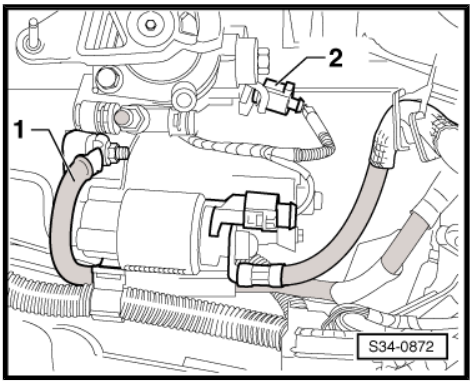
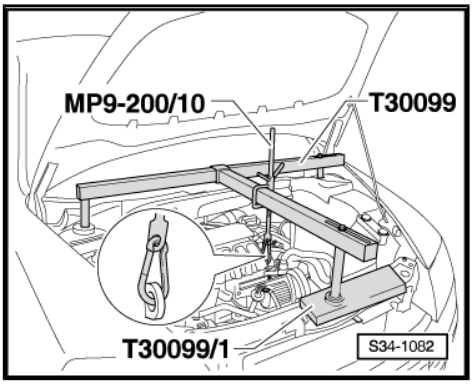
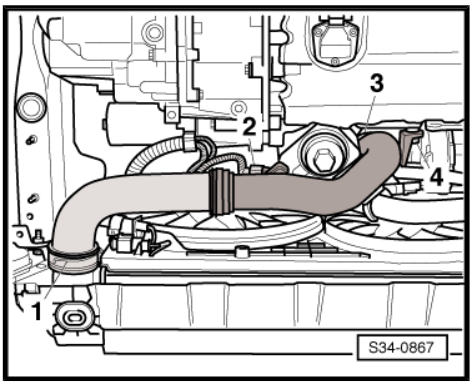
– Remove earth strap -1- from top starter.
– Disconnect plug -2- of the reversing light switch -F4- .
– Disconnect connector and cables from the starter.
– Remove engine/gearbox connecting screws at the top.
– Remove fixing screw for starter at the top.
– If hose and cable connections are located in the area of the lifting eye of the engine for the supporting device -T30099- , these must now be removed.



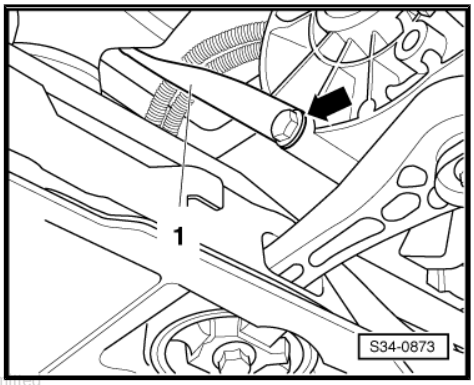

– Fit supporting device -T30099- .
– Take up the weight of the engine/gearbox unit at the spindle.
– Loosen the wheel bolts on front left and front right.
– Raise vehicle ⇒ Maintenance ; .
– Remove wheels at the front.
– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 and lower part of the front left wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .
– Unscrew bracket from starter.
– Remove the starter ⇒ Electrical System ⇒ Rep. Gr. 27 .




– Disconnect plug connection -2- at the charge pressure sender -G31- .
– Unscrew bolt -4-.
– Remove the air guide pipe between the charge air cooler and the intake manifold, to do so slightly raise the retaining clips -1- and -3- ⇒ Engine ⇒ Rep. Gr. 21 .




– Remove support (if present) -1- for exhaust system from gearbox -arrow- and front exhaust pipe ⇒ Engine ⇒ Rep. Gr. 26 .
– Separate exhaust system at the clamping sleeve and remove bracket for the exhaust system from the assembly carrier ⇒ Engine ⇒ Rep. Gr. 26 .
– Tie up pre-exhaust pipe.




**Note**

*The decoupling elements in the exhaust pipe should not be bent by more than 10° - risk of damage.*

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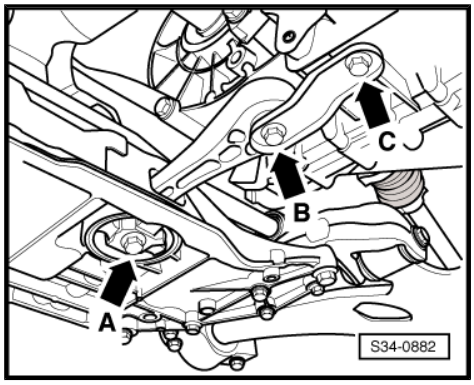
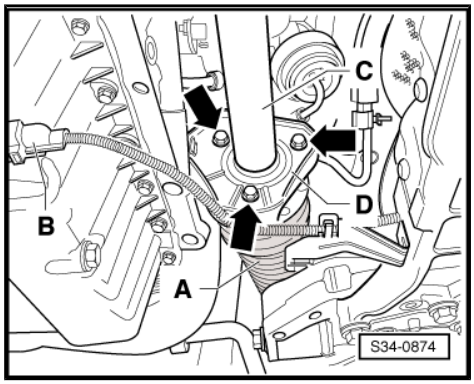
– Remove pendulum support from gearbox, to do so release the bolts -arrow B- and -arrow C-.
– Remove the left drive shaft from the flange shaft of the gearbox ⇒ Chassis ⇒ Rep. Gr. 40 and tie up as far as possible (do not damage the surface protection).




– Disconnect plug -B- from oil level and oil temperature sender -G266- .

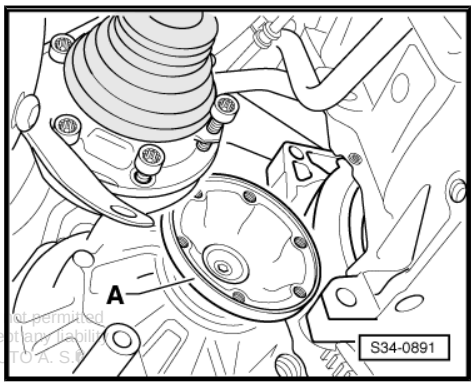
**For vehicles with intermediate shaft:**

– Remove right drive shaft ⇒ Chassis ⇒ Rep. Gr. 40 .
– Remove right intermediate shaft -C- from bracket -D- -arrows- and pull off from the rigid shaft of the gearbox.




**For vehicles without intermediate shaft:**

– Only remove right drive shaft from the flange shaft -A- of the gearbox.

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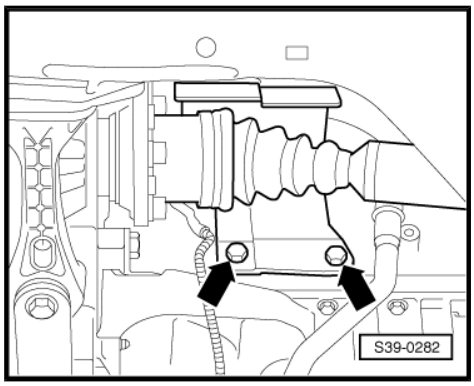
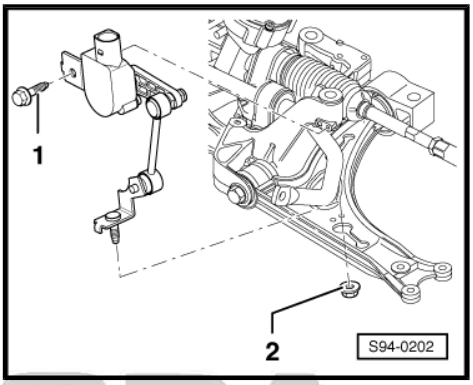
– Remove screen cap for drive shaft (if present) from the engine -arrows-
– Secure drive shaft (e.g. with wire, cord).

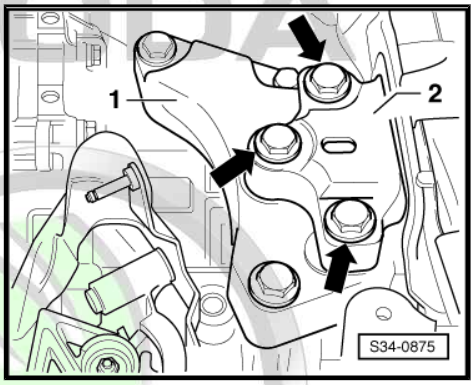
**Continued for all vehicles:**



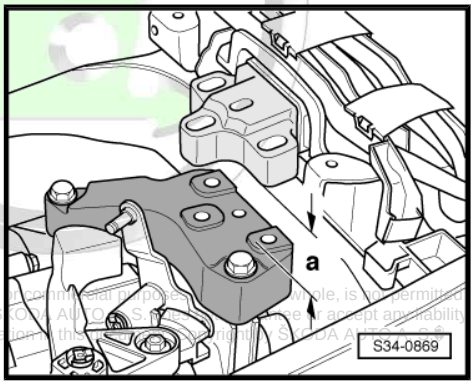
– Disconnect the plug connection on the front left vehicle level sensor -G78- (if present).
– Unscrew nut -2-.
– Release screw -1- and remove the sender.
– Fix the assembly carrier before removing ⇒ Chassis ⇒ Rep. Gr. 40 .
– Remove the assembly carrier with console without steering gear, left track control arm and coupling rod ⇒ Chassis ⇒ Rep. Gr. 40 .




– Unscrew the screws -arrows- of the left unit mounting -2- from the console -1-.




– Lower the gearbox to the dimension -a- approx. 60 mm by adjusting the spindle.

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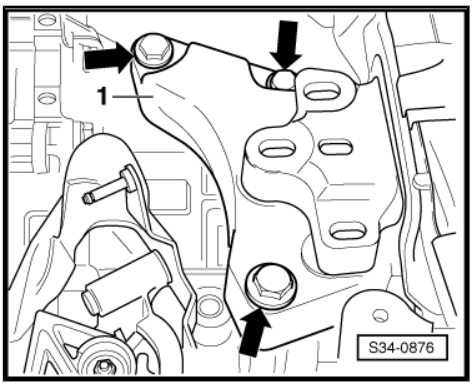
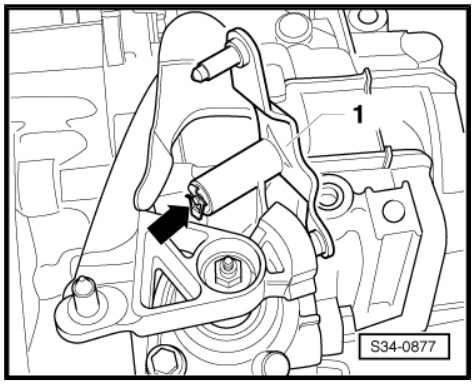
– Unscrew the fixing screws -arrows- for the console -1-.
– Remove console -1- from gearbox.



**Metal relay lever**

– Detach circlip -arrow- from the relay lever -1- and remove relay lever.

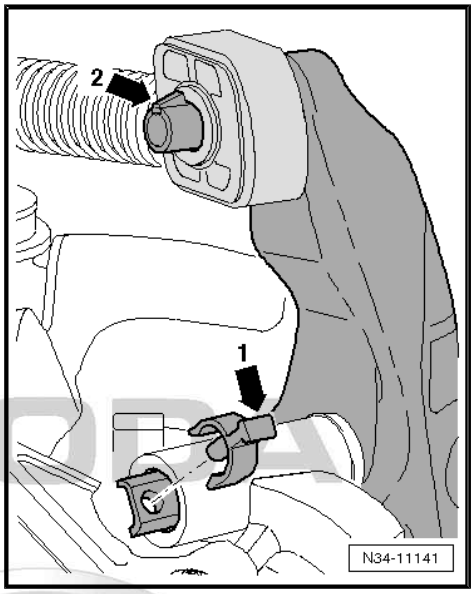



**Plastic relay lever**

• Gearbox shift lever is located in the neutral position.

The relay lever is secured with a clip -arrow 1- in the cover

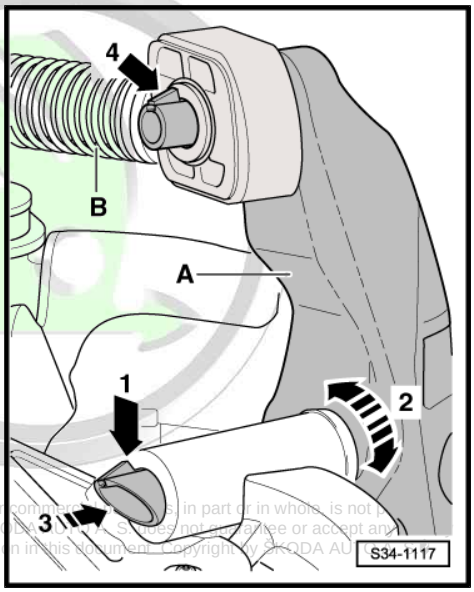
– Remove the clip -arrow 1- and the relay lever together with the cable lock -arrow 2-.




The relay lever is secured with a catch -arrow 1- in the cover

– Carefully press down the catch -arrow 1- up to the stop.

– Move back and forward reversing lever -A- in its position -arrow 2-. To do so carefully pull out in -direction of arrow 3- with the cable lock -B-.




**Note**

*To install, grease bearing points and friction surfaces with grease -G 000 450 02- .*

**Continued for all vehicles:**

– Remove the gearshift lever from the gearshift shaft.

– Remove engine/gearbox connecting screws at the bottom and screw (M8 x 30) for the bracket of the coolant pipe to turbo-charger (if this wiring is available).

Align gearbox mount -3282 - for removal of gearbox “02Q” with adjusting plate -3282/33- .

– Insert gearbox mount -3282 - into engine/gearbox jack , e.g. -V.A.G 1383A- .

– Align arms of the gearbox mount to match the holes in the adjusting plate .

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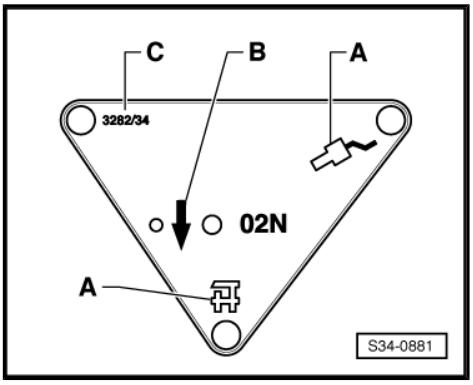
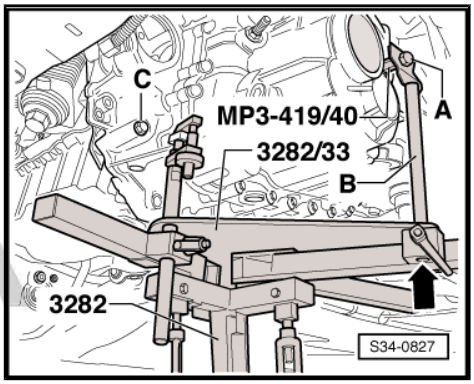
– Screw in mounting elements -A-, as shown on the adjusting plate .
– Instead of the mounting element -C- screw in the bolt -3282/29 - .
– Position the engine and gearbox jack e.g. -V.A.G 1383A- below the vehicle; the arrow -B- on the adjusting plate points in the direction of travel/vehicle.
– Align the adjusting plate parallel to the gearbox.




– Secure adapter -MP3-419/40- in the threaded bore of the gearbox housing as shown.
– Then screw in the bolt -3282/29- into the hole for the fixing screw of the pendulum support on the gearbox.
– Secure the gearbox on the gearbox mount -3282- using screw (M10 x 20) -A-.

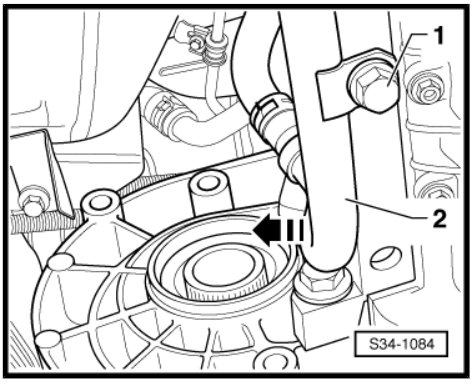
While doing so the drift -B- should close at the bottom flush with the guide of the gearbox mount -3282- -arrow-.

– Remove engine/gearbox -C- connecting screw.



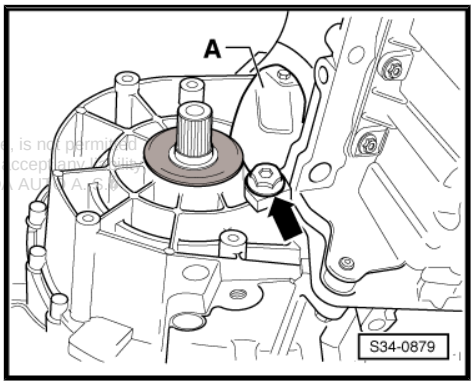

**For vehicles with auxiliary heating**

– Unscrew screw -1- and carefully press off the pipe -2- of the auxiliary heating from the engine -in direction of arrow-.




**Continued for all vehicles:**

– Remove small cover plate -A- for flywheel.
– Unscrew engine/gearbox connecting screw -arrow-.
– Press gearbox from engine (dowel sleeves).

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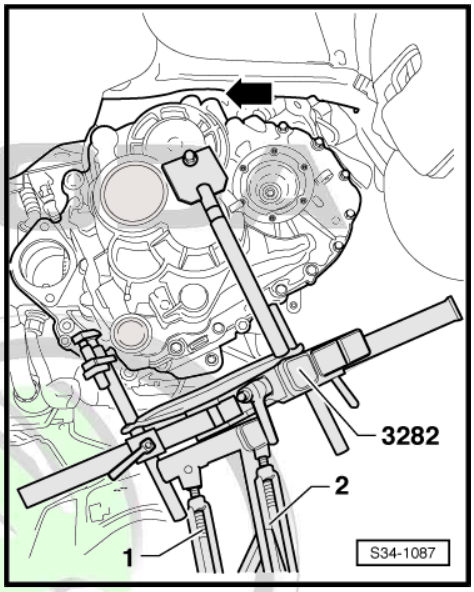
– Turn the gearbox in the area of the differential gear via the spindle -1- of the gearbox mount -3282- upwards.
– Position the gearbox via the spindle -2- of the gearbox mount -3282- inclined to the left.
– Then guide the right flange shaft of the gearbox past the flywheel, while doing so observe the frame side rail -arrow-.
– Carefully lower the gearbox.




**Note**

*Observe all lines when lowering the gearbox.*

## 2.2 Removing gearbox - Four-wheel drive

**Special tools and workshop equipment required**

- Adapter -MP3-419/40 (VW 771/40)-
- Gearbox attachment device -MP3-478 (3336)-
- Hose clamps -MP7-602 (3094)-
- Supporting device -T30099-
- Gearbox mount -3282-
- Adjusting plate -3282/33-
- Engine and gearbox jack e.g. -V.A.G 1383A-

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– Remove engine cover ⇒ engine ⇒ Rep. Gr. 10 .

**Note**

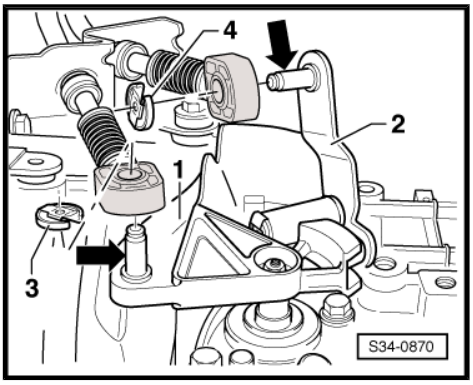
- *All cable straps which are detached or cut open when removing, should be fitted on again in the same place when installing.*
- *After the battery earth strap is disconnected and connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*

– Disconnect the battery-earth strap with the ignition off ⇒ Electrical System ⇒ Rep. Gr. 27 .
– Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 .
– Remove battery and battery tray ⇒ Electrical System ⇒ Rep. Gr. 27 .
– Remove the cooling water tank cover ⇒ Body Work ⇒ Rep. Gr. 66 .

– Remove lock washer -3- for shift cable from gearbox shift lever -1- and pull off the shift cable from the stud -arrow-.

**Metal relay lever**

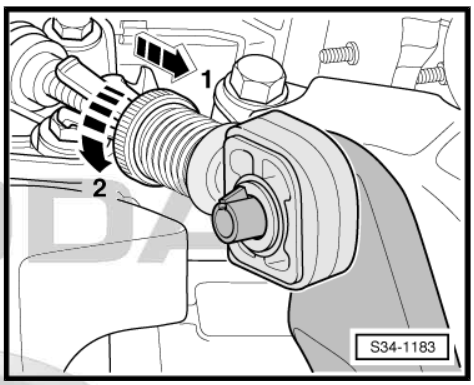
– Remove lock washer -4- for selector cable from relay lever -2- and pull off the selector cable from the stud -arrow-.




**Plastic relay lever**

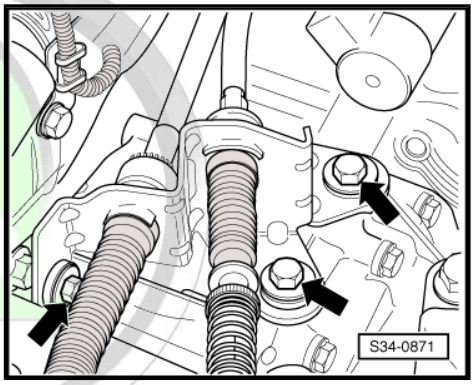
- In order to avoid damage to the selector cable, the cable lock must be separated from the selector cable before removal.

– Pull forward the locking mechanism as far as the stop in -direction of arrow 1-, then lock by turning to the left in -direction of arrow 2-.



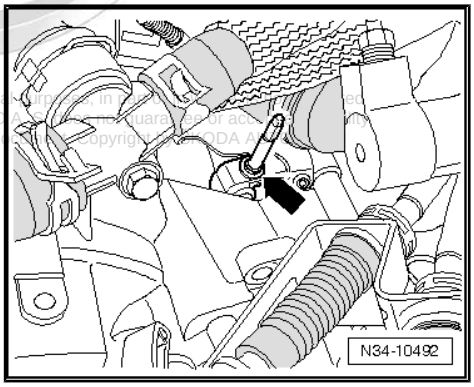

**Continued for all vehicles:**

– Disconnect cable support from gearbox -arrows-, lay aside and tie up.




– If present, remove the ventilation pipe from the angle gearbox -arrow-.

**A tube-hose line or a plastic line is fitted between the master cylinder and the bleeder.**

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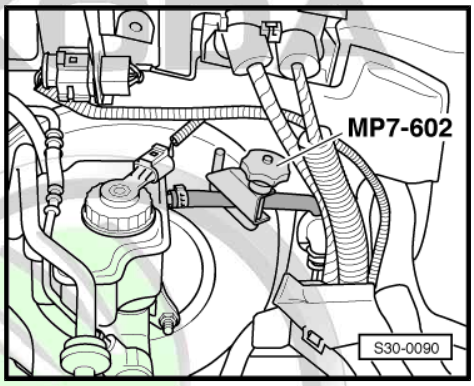
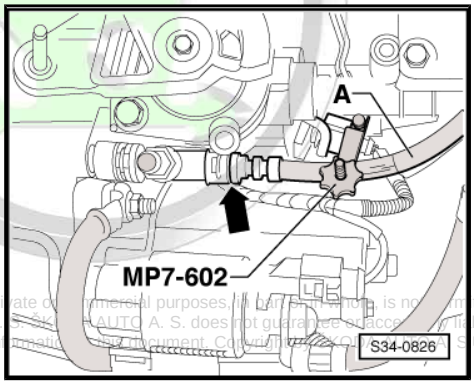
**Note**

*When performing the following work, make sure that no brake fluid comes into contact with the frame side rail or the gearbox. If this is the case, these points must be cleaned thoroughly.*

– If a plastic line is fitted, then the return hose must be removed at the master cylinder and closed in a suitable manner (do not use hose clamp -MP7–602- ).




– If a tube-hose line is fitted, pinch off the hose for the tube-hose line -A- to the master cylinder with the hose clamp -MP7-602 (3094)- (do not use the hose clamp -MP7–602- for the plastic line -A-).
– Pull out retaining clip -arrow- for tube-hose line and/or plastic line up to the stop.
– Pull out the tube-hose line and/or plastic line from the bleeder/ slave cylinder and close in a suitable manner.




**Caution**

*After removing the tube-hose line, do not operate the clutch pedal.*

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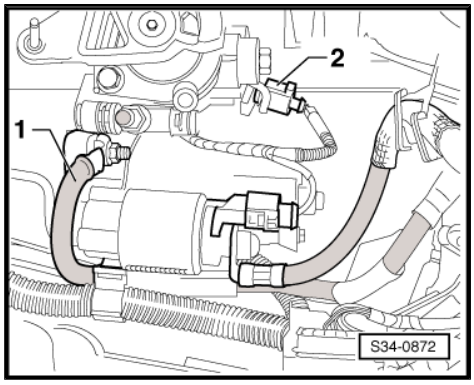
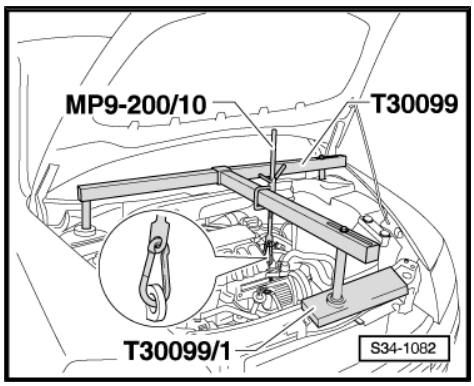
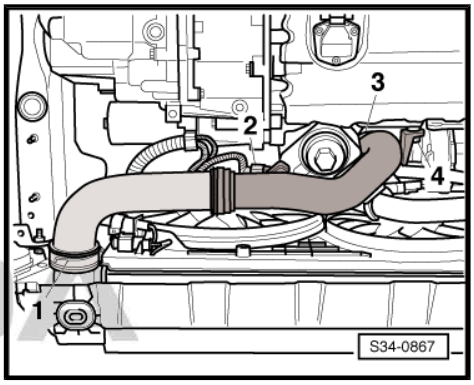
– Remove earth strap -1- from top starter.
– Disconnect plug -2- of the reversing light switch -F4- .
– Disconnect connector and cables from the starter.
– Remove engine/gearbox connecting screws at the top.
– Remove fixing screw for starter at the top.
– If hose and cable connections are located in the area of the lifting eye of the engine for the supporting device -T30099- , these must now be removed.



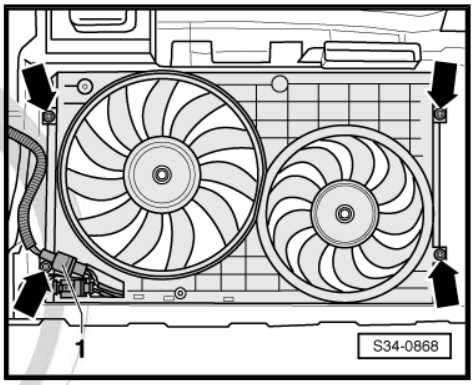

– Fit supporting device -T30099- .
– Take up the weight of the engine/gearbox unit at the spindle.
– Loosen the wheel bolts on front left and front right.
– Raise vehicle ⇒ Maintenance ; Octavia II .
– Remove wheels at the front.
– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 and lower part of the front left wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .
– Unscrew bracket from starter.
– Remove the starter ⇒ Electrical System ⇒ Rep. Gr. 27 .



– Disconnect plug connection -2- at the charge pressure sender -G31- .
– Unscrew bolt -4-.
– Remove the air guide pipe between the charge air cooler and the intake manifold, to do so slightly raise the retaining clips -1- and -3- ⇒ Engine ⇒ Rep. Gr. 21 .




– Disconnect plug connection -1-.
– Screw out screws -arrows- and take out fan shroud downwards.
– Remove all supports for exhaust gas system from gearbox and from pre-exhaust pipe ⇒ Engine ⇒ Rep. Gr. 26 .
– Separate exhaust system at the clamping sleeve and remove bracket for the exhaust system from the assembly carrier ⇒ Engine ⇒ Rep. Gr. 26 .
– Tie up pre-exhaust pipe.




**Note**

*The decoupling elements in the exhaust pipe should not be bent by more than 10° - risk of damage.*

– If present, remove screen cap for drive shaft -arrows-.

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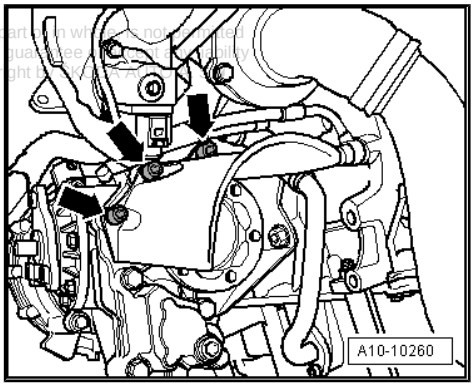
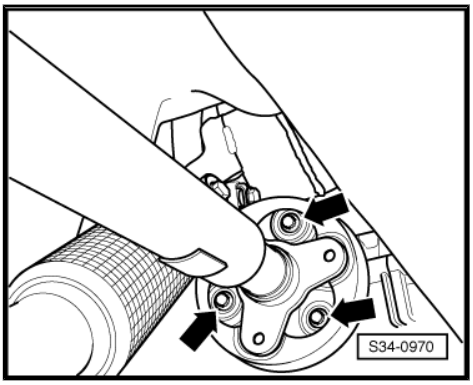
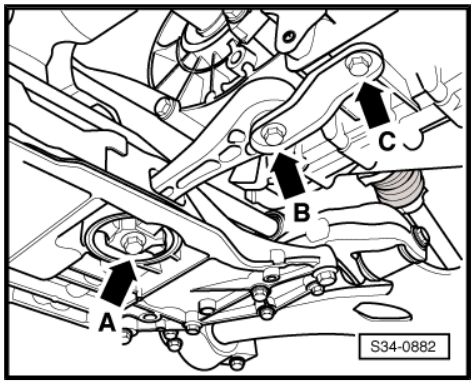



– Mark the position of the propshaft with flexible disk to the flange of the angle gearbox.
– Unscrew propshaft with flexible disk from flange of angle gearbox -arrows-.

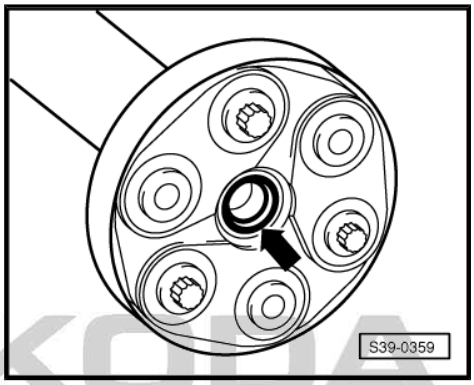


– Remove pendulum support from gearbox, to do so release the bolts -arrow B- and -arrow C-.



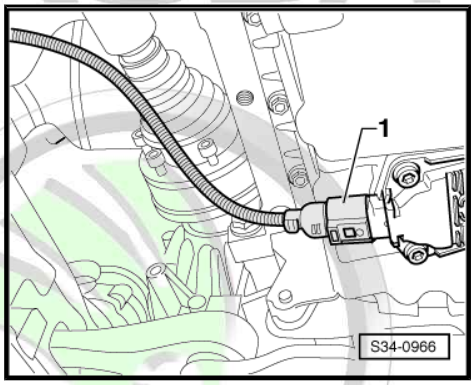

**Note**

*After removing the pendulum support from the gearbox, the engine/gearbox unit swivels slightly towards the front (direction front). When removing and installing make sure that the gasket ring -arrow- in the flange of the propshaft is not damaged.*

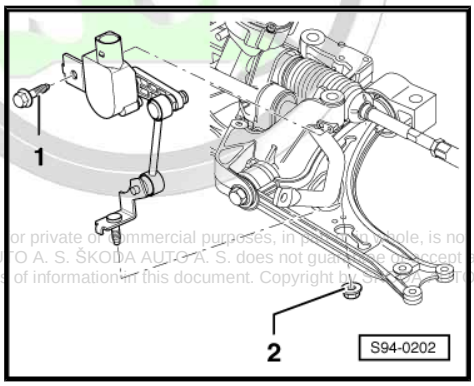



– Push engine/gearbox unit forwards and take propshaft out of angle gearbox.
– Raise propshaft and tie up.

– Disconnect plug -1- for oil level and oil temperature sender -G266- .




– Disconnect the plug connection on the front left vehicle level sensor -G78- .
– Unscrew nut -2-.
– Release screw -1- and remove the sender.
– Fix the assembly carrier before removing ⇒ Chassis ⇒ Rep. Gr. 40 .
– Remove the assembly carrier with console without steering gear, left track control arm and coupling rod ⇒ Chassis ⇒ Rep. Gr. 40 .
– Remove left and right drive shafts from the flange shafts of the gearbox ⇒ Chassis ⇒ Rep. Gr. 40 and tie up as far as possible (do not damage the surface protection).

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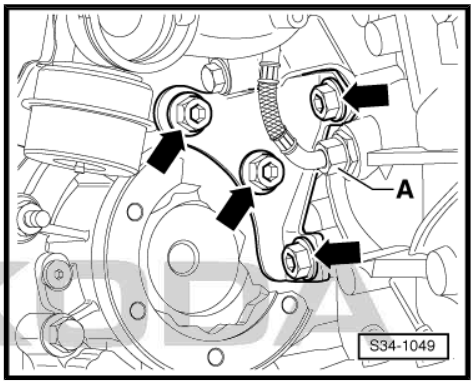
**For vehicles without particle filter:**

– Remove oil line for exhaust turbocharger -A- at engine.

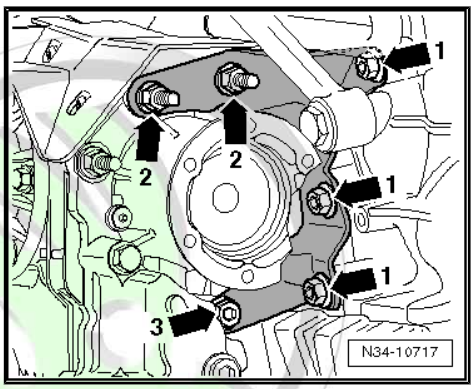
– Remove support between engine and angle gearbox -arrows-.




**For vehicles with particle filter:**

– Remove particle filter with bracket for particle filter ⇒ Engine ⇒ Rep. Gr. 26 .

– Release screws for support between engine and angle gearbox -arrows 1, 2- and -3-.

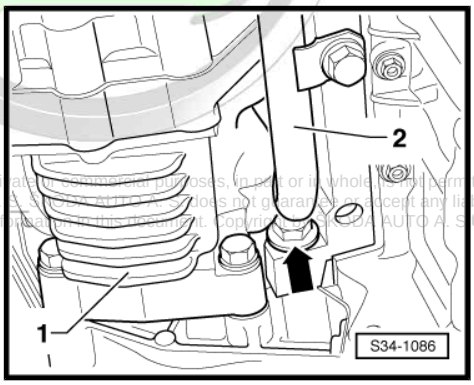



**Note**

*The support between engine and angle gearbox can only be removed if the gearbox is removed from the engine.*

**For vehicles with auxiliary heating**

– For these vehicles the angle gearbox -1- must be removed ⇒ page 101 .



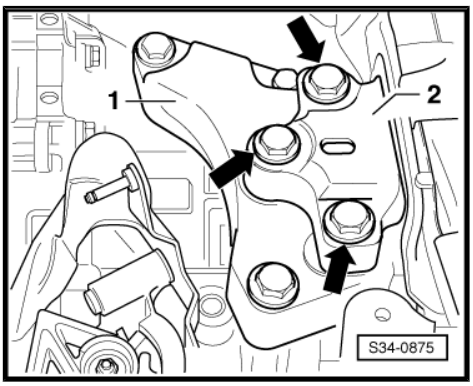

**Note**

♦ *Otherwise the pipe -2- of the auxiliary heating is damaged.*

♦ *The engine/gearbox connecting screw -arrow- can be removed from the cylinder block only after removing the pipe -2- ⇒ page 96 .*

**Continued for all vehicles:**

– Unscrew the screws -arrows- of the left unit mounting -2- from the console -1-.

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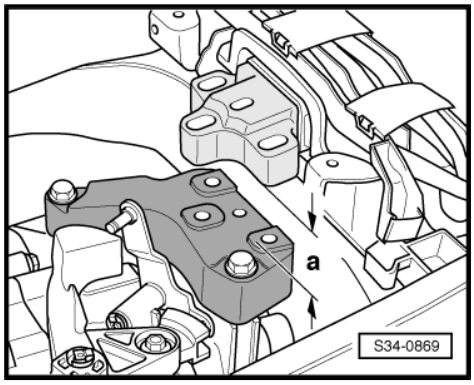
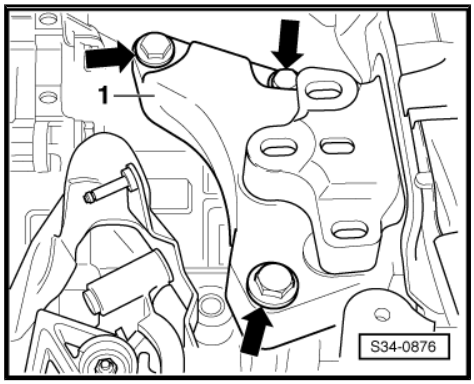
– Lower the gearbox to the dimension -a- approx. 60 mm by adjusting the spindle.




– Unscrew the fixing screws -arrows- for the console -1-.
– Remove console -1- from gearbox.

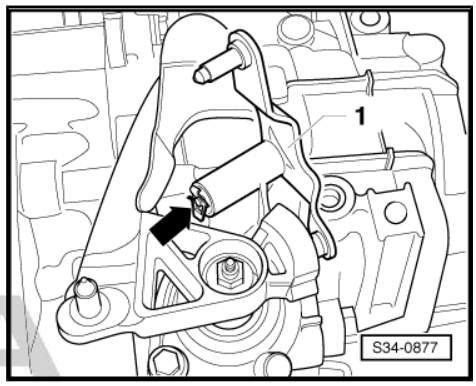



**Metal relay lever**

– Detach circlip -arrow- from the relay lever -1- and remove relay lever.

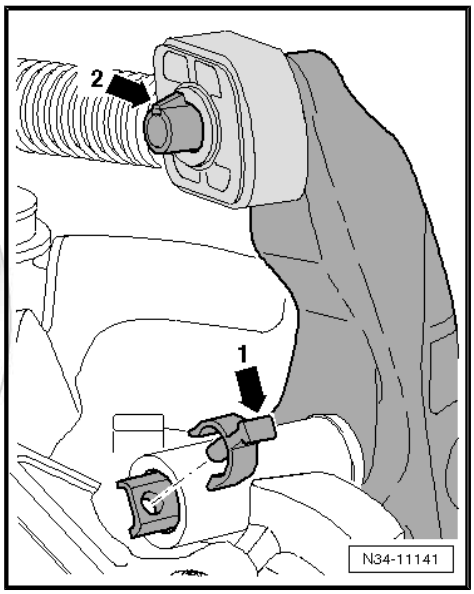
**Plastic relay lever**

• Gearbox shift lever is located in the neutral position.




The relay lever is secured with a clip -arrow 1- in the cover

– Remove the clip -arrow 1- and the relay lever together with the cable lock -arrow 2-.

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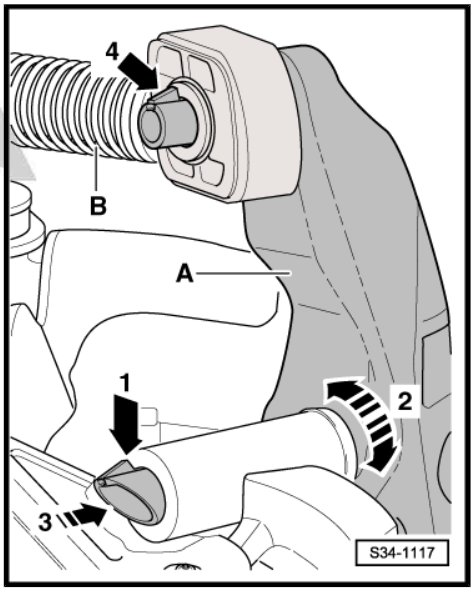
The relay lever is secured with a catch -arrow 1- in the cover

– Carefully press down the catch -arrow 1- up to the stop.
– Move back and forward reversing lever -A- in its position -arrow 2-. To do so carefully pull out in -direction of arrow 3- with the cable lock -B-.




**Note**

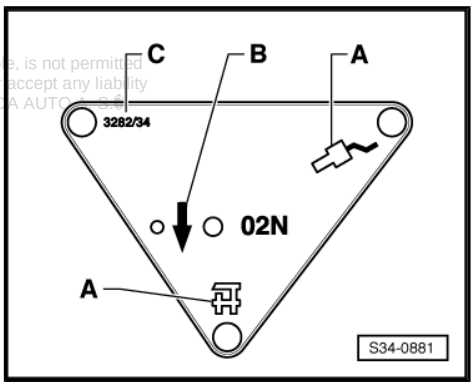
*To install, grease bearing points and friction surfaces with grease -G 000 450 02- .*

**Continued for all vehicles:**

– Remove the gearshift lever from the gearshift shaft.
– Remove engine/gearbox connecting screws below.

Align gearbox mount -3282 - for removal of gearbox “02Q” with adjusting plate -3282/33- .

– Insert gearbox mount -3282 - into engine/gearbox jack , e.g. -V.A.G 1383A- .
– Align arms of the gearbox mount to match the holes in the adjusting plate .
– Screw in mounting elements -A-, as shown on the adjusting plate .
– Instead of the mounting element -C- screw in the bolt -3282/29 - .
– Position the engine and gearbox jack e.g. -V.A.G 1383A- below the vehicle; the arrow -B- on the adjusting plate points in the direction of travel/vehicle.
– Align the adjusting plate parallel to the gearbox.

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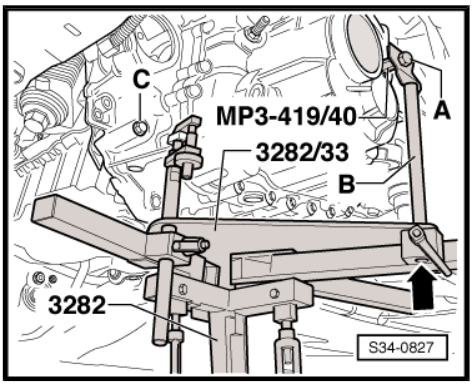
– Secure adapter -MP3-419/40- in the threaded bore of the gearbox housing as shown.
– Then screw in the bolt -3282/29- into the hole for the fixing screw of the pendulum support on the gearbox.
– Secure the gearbox on the gearbox mount -3282- using screw (M10 x 20) -A-.

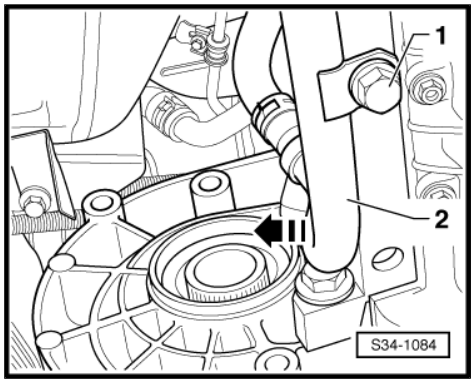
While doing so the drift -B- should close at the bottom flush with the guide of the gearbox mount -3282- -arrow-.

– Remove engine/gearbox -C- connecting screw.

**For vehicles with auxiliary heating**

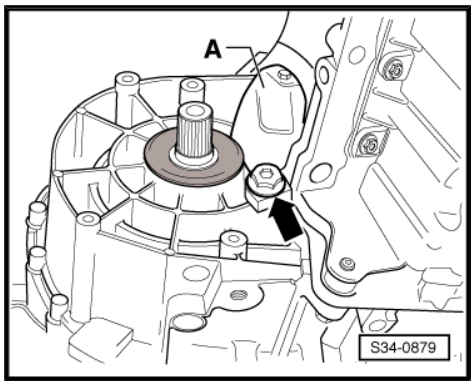


– Unscrew screw -1- and carefully press off the pipe -2- of the auxiliary heating from the engine -in direction of arrow-.




**Continued for all vehicles:**

– Remove small cover plate -A- for flywheel.



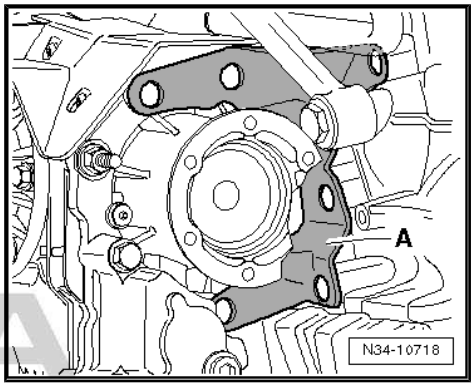

**Note**

*To provide a clearer illustration, the figure of the front drive is used.*

– Unscrew engine/gearbox connecting screw -arrow-.
– Press gearbox from engine (dowel sleeves).

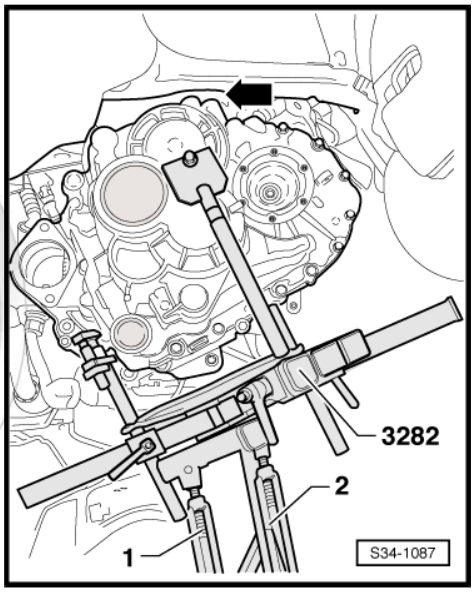
**For vehicles with particle filter:**

– Remove support -A- between engine and angle gearbox.




**Continued for all vehicles:**

– Turn the gearbox in the area of the differential gear via the spindle -1- of the gearbox mount -3282- upwards.
– Position the gearbox via the spindle -2- of the gearbox mount -3282- inclined to the left.
– Then guide the gearbox/angle gearbox past the flywheel, while doing so observe the frame side rail -arrow-.
– Carefully lower the gearbox.




**Note**

*Observe all lines when lowering the gearbox.*

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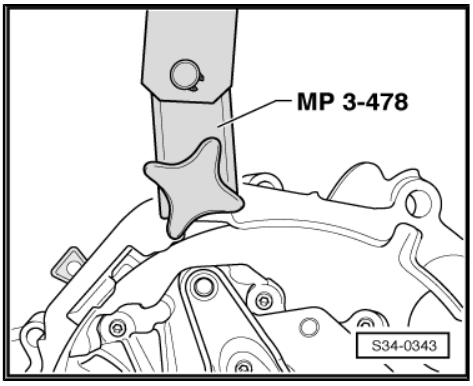
## 2.3 Transporting the gearbox

– Screw down gearbox suspension device -MP3-478- onto clutch housing.



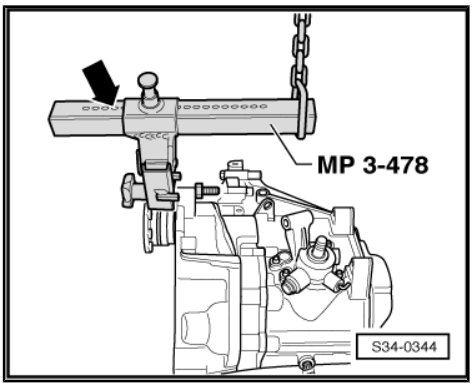

– Adjust supporting arm at slide with locking pin -arrow-.

Number of visible holes:

- ♦ on front drive = 6
- ♦ on four-wheel drive = 9

– Raise gearbox with workshop crane and gearbox suspension device -MP3-478- .

– Place down gearbox, e.g. in a transport container.



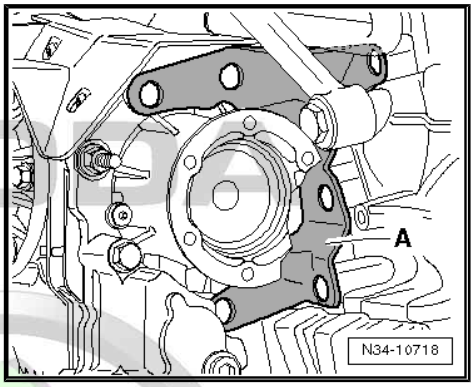

## 2.4 Installing the gearbox

The installation of the gearbox occurs in reverse order. Observe the stress-free assembly bracket in the vehicle ⇒ Engine ⇒ Rep. Gr. 10 .

**For vehicles with particle filter and four-wheel drive:**

Fit support between engine and angle gearbox -A- onto the angle gearbox before flange mounting the gearbox.

**Continued for all vehicles:**

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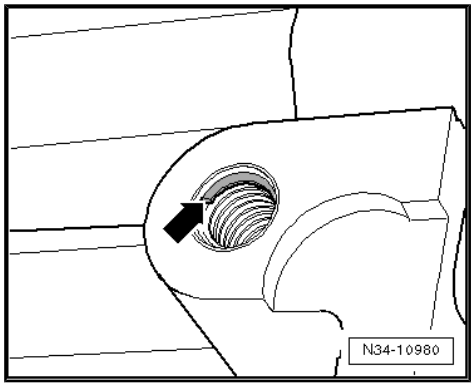


**Note**

- *Clean splines of drive shaft and apply a thin film of grease for plug serration of clutch disc -G 000 100- .*
- *Always replace the self-locking nuts and screws.*
- *If the gearbox is inserted, ensure the intermediate plate between the engine and gearbox is correctly installed.*
- *Check whether the dowel sleeves for centering the gearbox are present in the cylinder block, insert missing sleeves. If the sleeves are not provided, complications while shifting as well as problems with the clutch might occur and gearbox noises could arise.*
- *As of gearbox manufacturing date 28 05 7 threaded inserts are located in the bolt-holes for the pendulum support (e.g. “HeliCoil”).*
- *Distinguishing feature: Shoulder at first thread turn -arrow-.*
- *Pay attention to the corresponding fixing screws and the tightening torque for the pendulum support ⇒ Engine ⇒ Rep. Gr. 10 .*
- *Installing starter and cables ⇒ Electrical System ⇒ Rep. Gr. 27 .*
- *Pay attention to the tightening sequence of the fixing screws for the support between engine and angle gearbox ⇒ page 108 .*
- *Install water box cover ⇒ Body Work ⇒ Rep. Gr. 66 .*
- *Install air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .*
- *Bleed the clutch control ⇒ page 36 .*
- *Attach the shift mechanism to the gearbox ⇒ page 71 .*
- *Setting the shift mechanism ⇒ page 77 .*
- *Inspect the gear oil level in the gearbox ⇒ page 100 .*
- *Check gear oil level in the angle gearbox ⇒ page 109 .*
- *If the front left vehicle level sensor -G78- was removed, then the headlight beam setting must be checked ⇒ Electrical System ⇒ Rep. Gr. 94 .*
- *Install noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 and lower part of the front left wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .*
- *Install front wheels ⇒ Chassis ⇒ Rep. Gr. 44 .*
- *After the battery earth strap is disconnected and connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*

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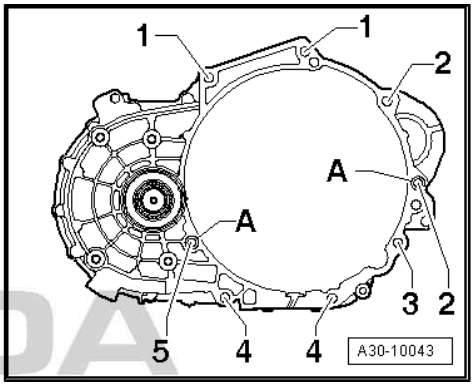
## 2.4.1 Tightening torques

Gearbox to engine (flange fig. gearbox)

| Pos. | Screw | Pieces | Nm |
|---|---|---|---|
| 1[1)] | M 12 x 55 | 2 | 80 |
| 2[1) 2)] | M 12 x 165 | 2 | 80 |
| 3 | M 10 x 105 | 1 | 40 |
| 4 | M 10 x 50 | 2 | 40 |
| 5[3)] | M 12 x 70 | 1 | 80 |
| A | Dowel sleeves | 2 | |




1) Screw with threaded pin M8

2) additional starter to gearbox

3) screwed in from the engine side

– Replace screws -1- and -3 to 5- ⇒ Electronic Catalogue of Original Parts .

| Component | Tightening torque |
|---|---|
| Gearbox console to gearbox[1)] | 60 Nm + 90° |
| Gearbox console to gearbox mount[1)] | 60 Nm + 90° |
| Cover plate for flywheel | 10 Nm |
| Screen cap of drive shaft to engine | 35 Nm |
| Screen cap of drive shaft to angle gearbox | 20 Nm |
| Support between engine and angle gearbox | ⇒ page 108 |
| Cable support to gearbox | ⇒ page 65 |
| Gearbox shift lever to gearshift shaft | ⇒ page 65 |
| Propshaft to angle gearbox | ⇒ page 233 |
| Pendulum support to gearbox | ⇒ Engine ⇒ Rep. Gr. 10 |
| Support for particle filter | ⇒ Engine ⇒ Rep. Gr. 26 |
| Exhaust pipe with catalytic converter | ⇒ Engine ⇒ Rep. Gr. 26 |
| Supports for exhaust manifold | ⇒ Engine ⇒ Rep. Gr. 26 |
| Bracket for electric cables | ⇒ Electrical System ⇒ Rep. Gr. 27 |
| Drive shaft to flange shaft | ⇒ Chassis ⇒ Rep. Gr. 40 |
| Coupling rod | ⇒ Chassis ⇒ Rep. Gr. 40 |
| Assembly carrier with consoles and track control arms | ⇒ Chassis ⇒ Rep. Gr. 40 |
| Front left side vehicle level sensor -G78- | ⇒ Chassis ⇒ Rep. Gr. 40 |
| Wheel bolts | ⇒ Chassis ⇒ Rep. Gr. 44 |

1) Always replace screws ⇒ Electronic Catalogue of Original Parts .

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# 3 Inspect gear oil

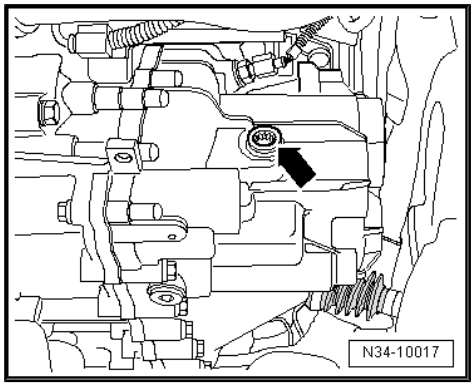
**Special tools and workshop equipment required**

- Socket wrench insert -T30023 (3357)-

Gearbox oil specification ⇒ Electronic Catalogue of Original Parts .

– Remove the sound dampening system of engine/gearbox ⇒ Body Work ⇒ Rep. Gr. 50 .

– Unscrew plug for inspecting gear oil -arrow-.




The oil is at the correct level if the gear is filled up to the lower edge of the oil filler hole.

– Screw in screw -arrow- using a new sealing ring.

– Tighten screws -arrow- to tightening torque ⇒ page 145 .

**If re-filling, do the following:**

– Unscrew plug -arrow-.

– Pour in gear oil up to lower edge of filler hole.

– Screw in screw -arrow- using a new sealing ring.

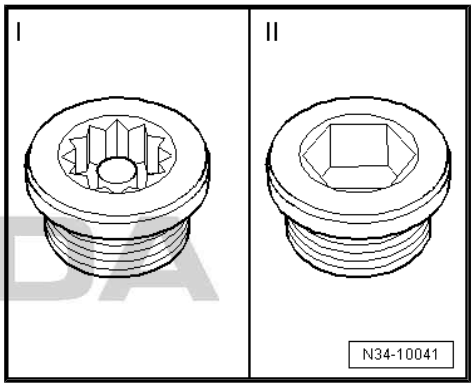
– Tighten screws -arrow- to tightening torque ⇒ page 145 .

– Install the noise insulation below the engine/gearbox ⇒ Body Work ⇒ Rep. Gr. 50 .

**Different versions of oil filler plug and oil drain plug.**

I - Oil filler plug and oil drain plug with internal serration

II - Oil filler plug and oil drain plug with Allan key

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# 4 Removing and installing angle gearbox

**Special tools and workshop equipment required**

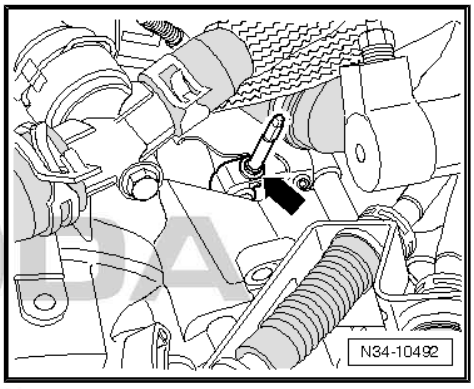
- Socket insert -T10107A-
- Grease for plug serration of clutch disc -G 000 100-

## 4.1 Remove angle gearbox

First check if a ventilation pipe -arrow- is mounted at the angle gearbox.

– Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 or ⇒ Engine ⇒ Rep. Gr. 24 .

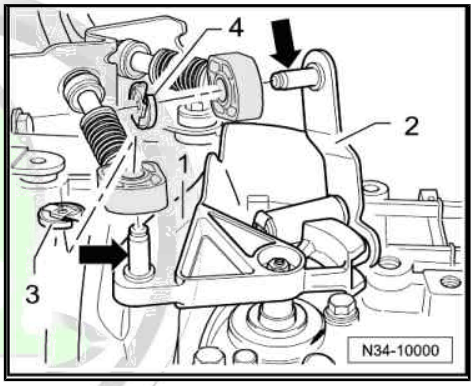
To remove the ventilation pipe, the shift mechanism must be removed from the gearbox:




– Remove lock washer -3- for shift cable from gearbox shift lever -1- and pull off the shift cable from the stud -arrow-.

**Metal relay lever**

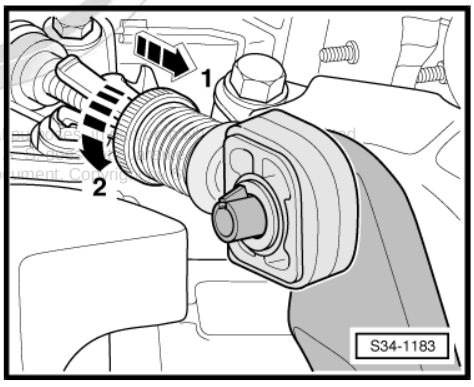
– Remove lock washer -4- for selector cable from relay lever -2- and pull off the selector cable from the stud -arrow-.




**Plastic relay lever**

- In order to avoid damage to the selector cable, the cable lock must be separated from the selector cable before removal.

– Pull forward the locking mechanism as far as the stop in -direction of arrow 1-, then lock by turning to the left in -direction of arrow 2-.




**Continued for all vehicles:**

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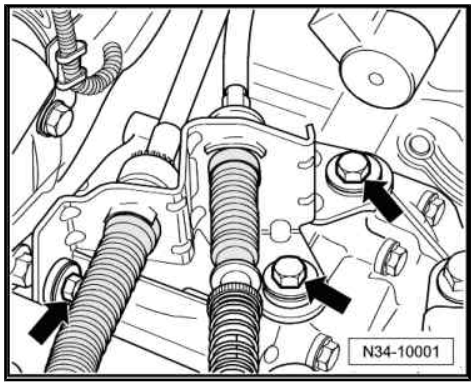
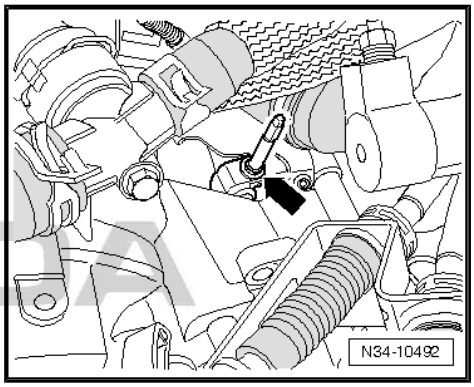
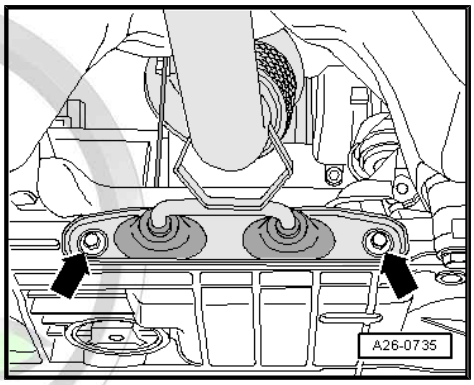
– Disconnect cable support from gearbox -arrows-, lay aside and tie up.




– If present, remove the ventilation pipe from the angle gearbox -arrow-.
– Loosen the wheel bolts on front left and front right.
– Raise vehicle ⇒ Maintenance ; Octavia II .
– Remove wheels at the front.
– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 and front right wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .
– Remove all supports for exhaust gas system from gearbox and from pre-exhaust pipe ⇒ Engine ⇒ Rep. Gr. 26 .



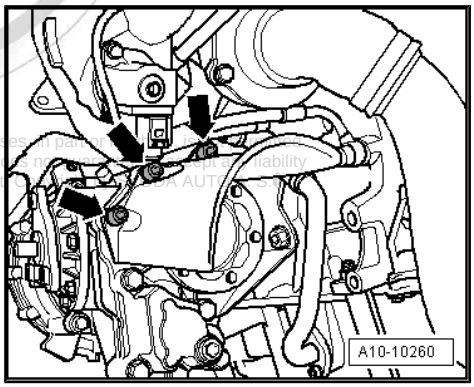

– Separate exhaust system at the clamping sleeve and remove bracket for the exhaust system from the assembly carrier -arrows- ⇒ Engine ⇒ Rep. Gr. 26 .
– Tie up pre-exhaust pipe.




**Note**

*The decoupling elements in the exhaust pipe should not be bent by more than 10° - risk of damage.*

– If present, remove heat shield for drive shaft -arrows-.

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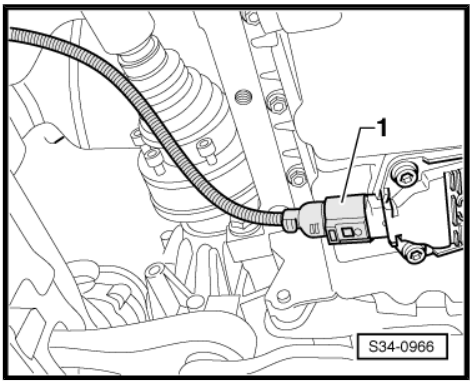
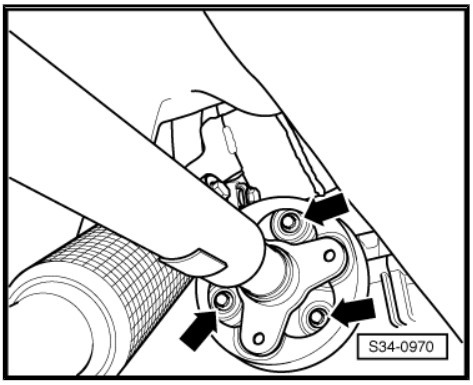
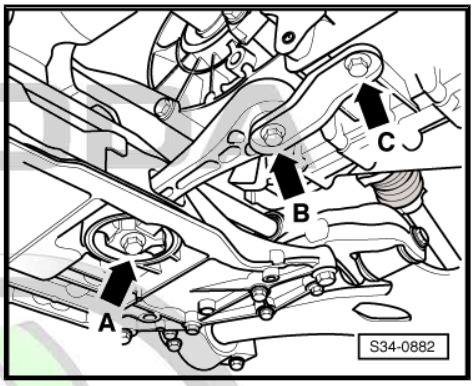
– Disconnect plug -1- from oil level and oil temperature sender -G266- .




– Mark the position of the propshaft with flexible disk to the flange of the angle gearbox.
– Unscrew propshaft with flexible disk from flange of angle gearbox -arrows-.



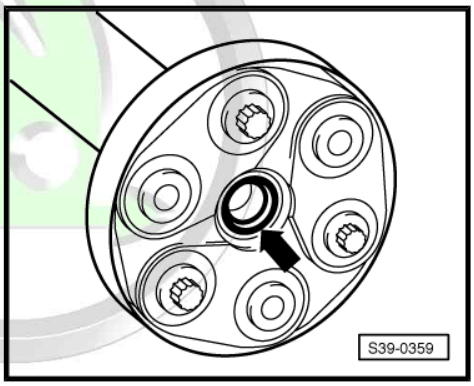

– Remove pendulum support from gearbox, to do so release the bolts -arrow B- and -arrow C-.




**Note**

*After removing the pendulum support from the gearbox, the engine/gearbox unit swivels slightly towards the front (direction front). When removing and installing make sure that the gasket ring -arrow- in the flange of the propshaft is not damaged.*

– Push engine/gearbox unit forwards and pull off the propshaft from the output flange of the angle gearbox.
– Raise propshaft and tie up.

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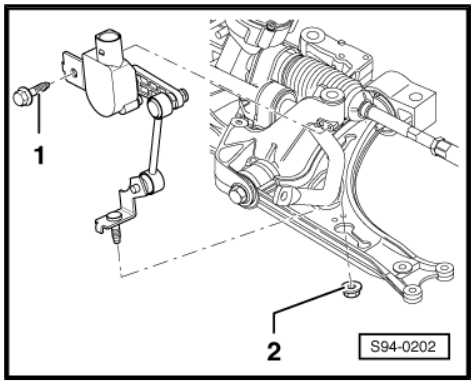
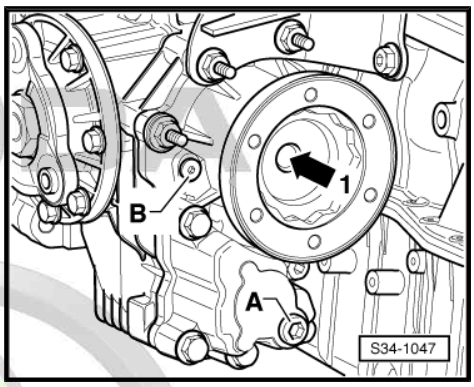
– Disconnect the plug connection on the front left vehicle level sensor -G78- .
– Unscrew nut -2-.
– Release screw -1- and remove the sender.
– Fix the assembly carrier before removing ⇒ Chassis ⇒ Rep. Gr. 40 .
– Remove assembly carrier with pendulum support, anti-roll bar, consoles, steering gear and track control arms ⇒ Chassis ⇒ Rep. Gr. 40 .
– Remove the right drive shaft from the flange shaft of the gearbox ⇒ Chassis ⇒ Rep. Gr. 40 and tie up (do not damage the surface protection).




– Remove the right flange shaft bolt -arrow- using the socket insert -T10107A- .

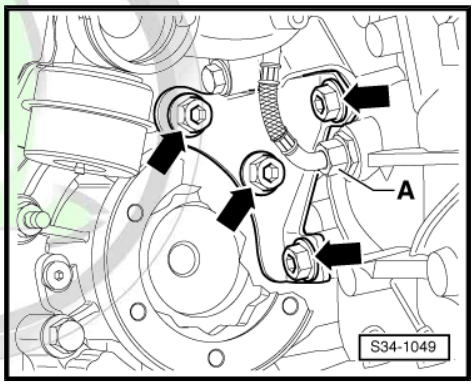
**Note**

*On vehicles without particle filter, the right flange shaft remains in the angle gearbox.*




**For vehicles without particle filter:**

– If present, remove oil line for exhaust turbocharger -A- at engine.
– Release screws -arrows- for gearbox carrier at engine and angle gearbox and remove gearbox carrier.

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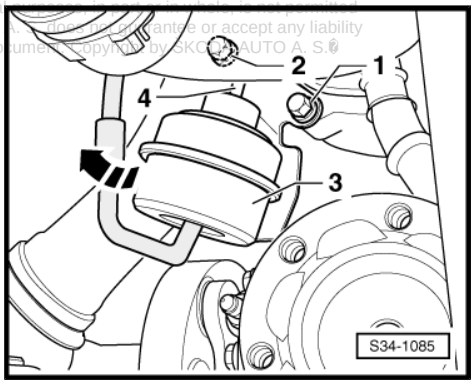
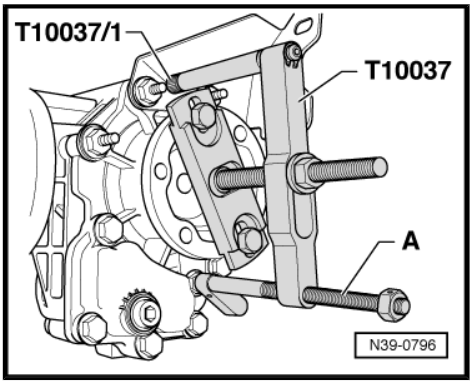
– If necessary the vacuum setting element of the charge pressure control -3- must be slightly turned to the side so that the upper fixing screws for angle gearbox are accessible on the manual gearbox.
– To do so, the screw -1- must be released and the screw -2- (covered) must only be slackened. Then press the vacuum setting element -3- slightly to the side -direction of arrow-, while doing so do not damage the rod -4-.




**For vehicles with particle filter:**

– Remove particle filter with bracket for particle filter ⇒ Engine ⇒ Rep. Gr. 26 .
– Position the catch pan under the angle gearbox.

– Screw extractor -T10037- onto right flange shaft.

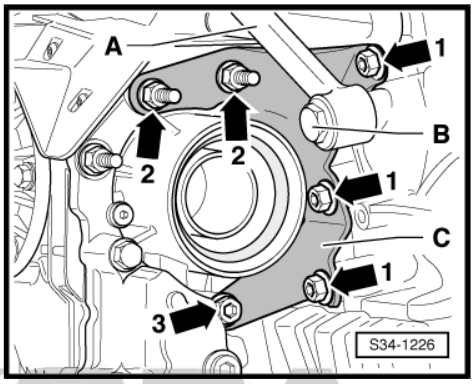



**Note**

*Use the extractor -T10037- to remove the right flange shaft so that the polygon bearings on the flange shaft are not damaged.*

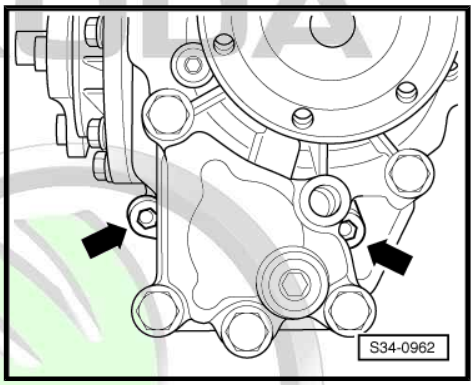
– Insert the thrust piece -MP3-410- between the gearbox carrier and the knurled nut -T10037/1- .
– Align the extractor -T10037- with the support -A- parallel to the flange.
– Take out the flange shaft.

– Remove the support -A- for exhaust gas turbocharger from the exhaust gas turbocharger, release the hollow screw -B- and remove the support ⇒ Engine ⇒ Rep. Gr. 21 .
– Release screws for gearbox carrier at engine and angle gearbox -arrows 1, 2- and -3-.




**Continued for all vehicles:**

– Unscrew the bottom engine/gearbox connecting screws -arrows-.

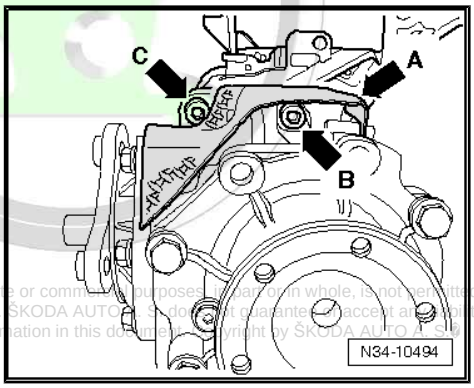



On certain vehicles a heat shield -arrow A- is located on the top side of the angle gearbox.

The screw -arrow B- is accessible below the heat shield.

The screw -arrow C- is accessible above the heat shield.

– Carefully press off angle gearbox from manual gearbox, while doing so secure it against falling.
– Take out angle gearbox.

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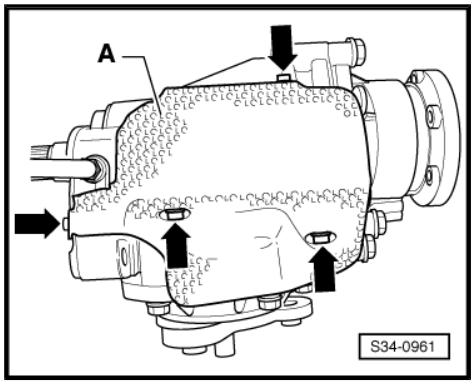
– If the angle gearbox is replaced, the heat shield -A- must be removed from the previous angle gearbox -arrows-
.




## 4.2 Install angle gearbox

– The installation occurs in reverse order, while paying attention to the following.

**Note**

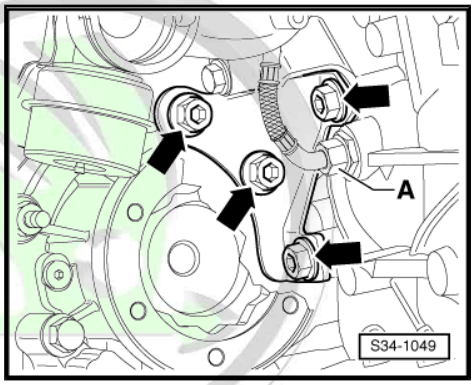
- *On installed manual gearbox, lightly grease the rigid serration at differential gear with grease for the plug serration of the clutch disc -G 000 100- .*
- *If applicable, install the heat shield ⇒ page 106 when replacing the angle gearbox.*
- *When attaching the angle gearbox to the manual gearbox slowly turn the flange shaft (carefully push angle gearbox to gearbox up to stop).*
- *Do not pull angle gearbox with the fixing screws against the manual gearbox, otherwise the angle gearbox can tilt and the fixing eyes can break off.*
- *Tighten gearbox/angle gearbox connecting screws crosswise (always replace screws ⇒ Electronic Catalogue of Original Parts ).*

– Attach angle gearbox to gearbox and tighten connecting screws crosswise.

**For vehicles without particle filter:**

– Install gearbox carrier at engine and angle gearbox -arrows-, to do so pay attention to the tightening sequence of the screws ⇒ page 108 .

– If present, install oil line for exhaust turbocharger -A- at engine.

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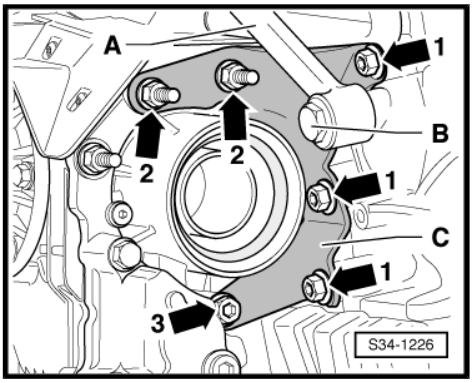
**For vehicles with particle filter:**

– Install gearbox carrier at engine and angle gearbox, to do so pay attention to the tightening sequence of the screws -arrows 1, 2- and -3- ⇒ page 108 .

– Install the support -A- for exhaust gas turbocharger, to do so attach the support on the exhaust gas turbocharger and screw in the hollow screw -B- with new O-rings ⇒ Engine ⇒ Rep. Gr. 21 .

– Carefully right drive in flange shaft, to do so turn.

– Install particle filter with bracket for particle filter ⇒ Engine ⇒ Rep. Gr. 26 .



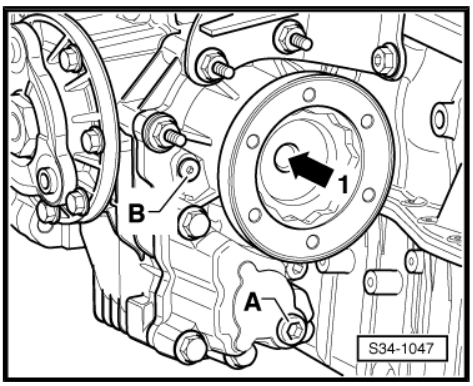

**Continued for all vehicles:**

– Tighten the screw of the flange shaft -arrow 1- with socket insert -T10107A- .

– After installing the right flange shaft, check the gear oil level in the angle gearbox ⇒ page 109 , to do so unscrew the oil filler plug -B-.

– Attach the right drive shaft to the flange shaft of the gearbox ⇒ Chassis ⇒ Rep. Gr. 40 .

– Install assembly carrier with pendulum support, anti-roll bar, consoles, steering gear and track control arms ⇒ Chassis ⇒ Rep. Gr. 40 .

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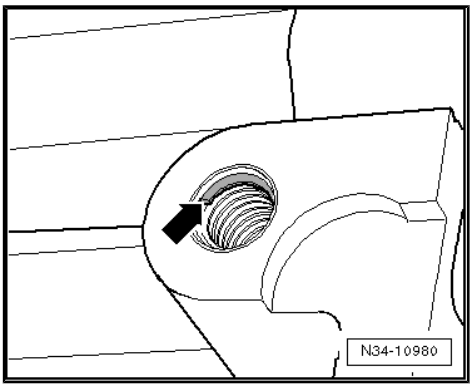
**Note**

- *As of production date 28 05 7 threaded inserts are located in the bolt-holes for the pendulum support (e.g. “Heli-Coil”).*
- *Distinguishing feature: Shoulder at first thread turn -arrow-.*
- *Please observe the corresponding fixing screws and the tightening torque for the pendulum support ⇒ Engine ⇒ Rep. Gr. 10 .*




If the shift mechanism was removed from the gearbox:

– Attach shift mechanism to the gearbox ⇒ page 71 and adjust shift mechanism ⇒ page 77 .

– Screw propshaft onto the flange of the angle gearbox ⇒ page 223 .

– Install all supports for exhaust system at gearbox and pre-exhaust pipe ⇒ Engine ⇒ Rep. Gr. 26 .

– Assemble exhaust system free of stress and install bracket for the exhaust system at the assembly carrier ⇒ Engine ⇒ Rep. Gr. 26 .

– Install the front right wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .

– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

– Install front wheels ⇒ Chassis ⇒ Rep. Gr. 44 .

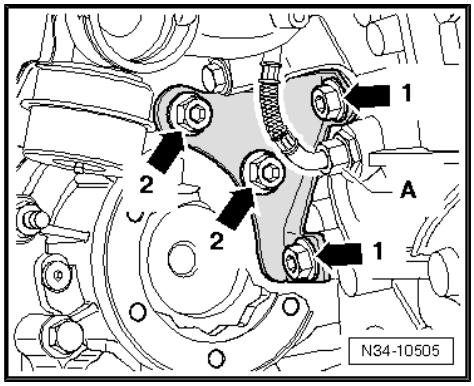
– If the front left vehicle level sensor -G78- was removed, then the headlight beam setting must be checked ⇒ Electrical System ⇒ Rep. Gr. 94 .

## 4.2.1 Tightening torques

**On vehicles without particle filter install gearbox carrier at engine and angle gearbox.**

When installing the gearbox carrier, observe the following mounting sequence:

– Screw in screws -arrows 1- by hand.
– Tighten screws -arrows 2- to 40 Nm.
– Tighten screws -arrows 1- to 40 Nm.

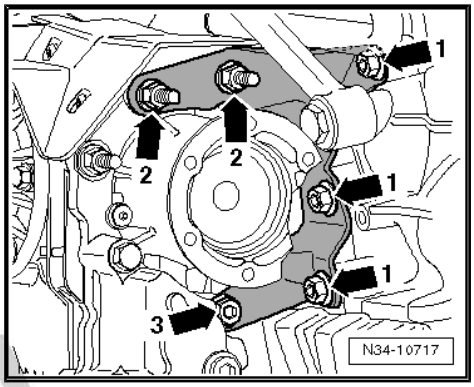



**On vehicles with particle filter install gearbox carrier at engine and angle gearbox**

Assignment of screws

| Pos. | Screw | Pieces |
|---|---|---|
| 1 | M10 x 21 | 3 |
| 2[1)] | M10 x 45 | 2 |
| 3 | M10 x 62 | 1 |

[1)] The head was adapted to the other screws shortly after start of the series.




When installing the gearbox carrier, observe the following mounting sequence:

– Screw in all screws by hand.
– Tighten screws -arrows 2- and -arrow 3- to 40 Nm.
– Tighten screws -arrows 1- to 40 Nm.

| Component | Tightening torque |
|---|---|
| Heat shield for angle gearbox | 5 Nm |
| Heat shield of drive shaft to angle gearbox | 20 Nm |
| Ventilation pipe in angle gearbox | 10 Nm |
| Right flange shaft to gearbox | ⇒ page 121 |
| Gearbox/angle gearbox[1)] connecting screws | ⇒ page 121 |
| Cable support to gearbox | ⇒ page 65 |
| Pendulum support | ⇒ Engine ⇒ Rep. Gr. 10 |
| Vacuum setting element of charge pressure control to exhaust turbocharger | ⇒ Engine ⇒ Rep. Gr. 21 |
| Supports for exhaust manifold | ⇒ Engine ⇒ Rep. Gr. 26 |
| Front left vehicle level sensor -G78- | ⇒ Chassis ⇒ Rep. Gr. 40 |

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[1)] Always replace screws ⇒ Electronic Catalogue of Original Parts .

# 5 Inspecting gear oil in the angle gearbox

## 5.1 Inspecting oil level in the angle gearbox

**Special tools and workshop equipment required**

- Catch pan

**The angle gearbox is screwed on laterally to the manual gearbox and equipped with its own closed oil supply.**

Oil specification ⇒ Electronic Catalogue of Original Parts .

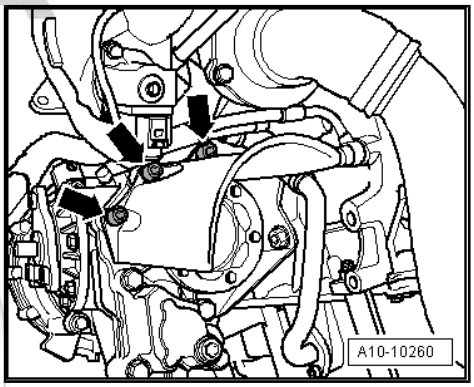
**Precondition**

- The angle gearbox must be in its installed position.

– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

– Position the catch pan under the angle gearbox.

– If present, remove heat shield for drive shaft -arrows-.




**Note**

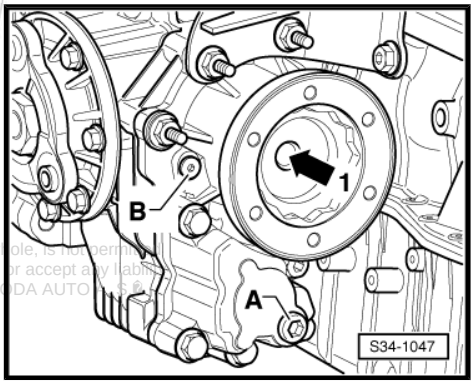
*Cover area under the oil filler plug with cloths.*

– Unscrew oil filler plug -B-.

Screw -B- must be replaced

The oil is at the correct level if the angle gearbox is filled up to the lower edge of the oil filler hole.

If oil gets onto the angle gearbox, it must be thoroughly removed.




– Top up oil if necessary ⇒ page 109 .

– Screw in new screw -B- and tighten to tightening torque.

– Install heat shield for drive shaft, if it was removed.

– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

**Tightening torques**

| Component | Nm |
|---|---|
| Filler screw[1)] | 15 |
| Heat shield of drive shaft to angle gearbox | ⇒ page 108 |

[1)] Always replace screw ⇒ Electronic Catalogue of Original Parts .

## 5.2 Top up oil in angle gearbox

**Special tools and workshop equipment required**

- Catch pan
- Filling device e.g. -VAS 6291- or -VAS 6291A-

**The angle gearbox is screwed on laterally to the manual gearbox and equipped with its own closed oil supply.**

Oil specification ⇒ Electronic Catalogue of Original Parts .

**Precondition**

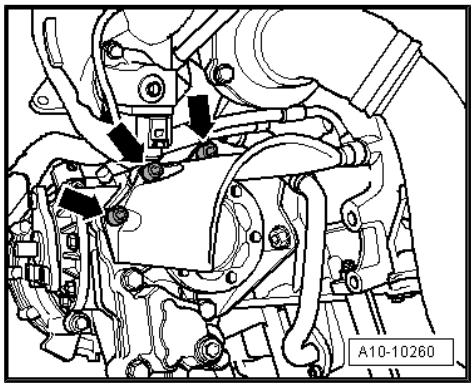
- The angle gearbox must be in its installed position.

– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

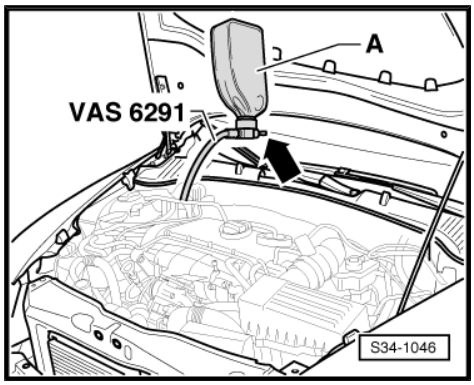
– Position the catch pan under the angle gearbox.

– If present, remove heat shield for drive shaft -arrows-.

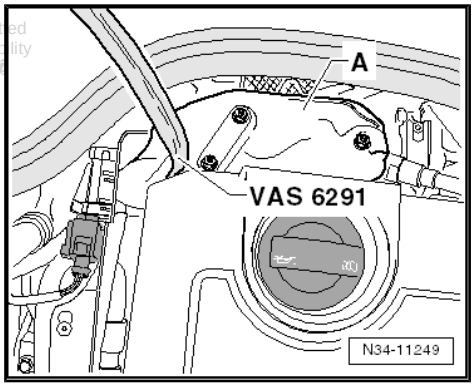
For topping up, use filling device , e.g. -VAS 6291- or -VAS 6291A- .




– Lay hose of filling device through the engine compartment.




– On vehicles with particle filter, guide the hose of the filling device -A- past the particle filter on the right.

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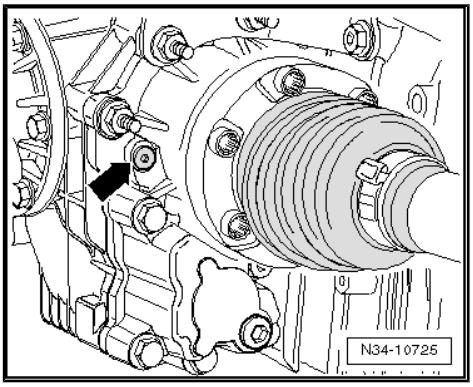
**Note**

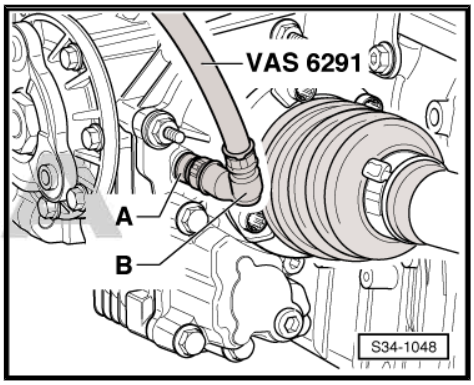
*Cover the area below the oil filler plug -arrow- with a cloth.*

– Release the oil filler plug -arrow- in the angle gearbox.

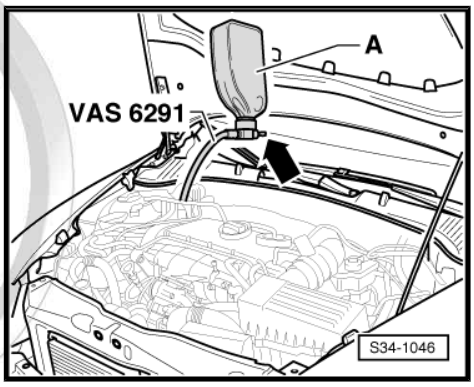



– Screw in adapter -A- up to the stop.
– Lock angular piece -B- with adapter -A-.

The hose must not sag.




– Ensure that the the valve -arrow- is closed.
– Screw oil reservoir -A- onto filling device - VAS 6291- .
– Now open valve -arrow- and hold oil reservoir as shown.
– Angle gearbox is now filled with oil.
– Raise the vehicle after several minutes.

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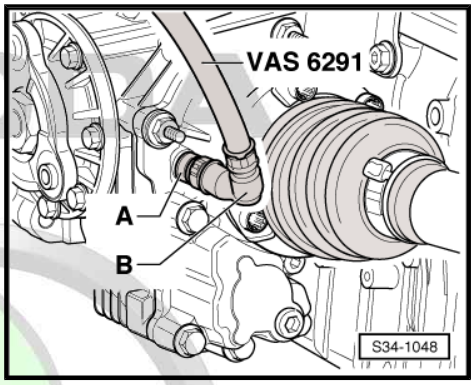
**Note**

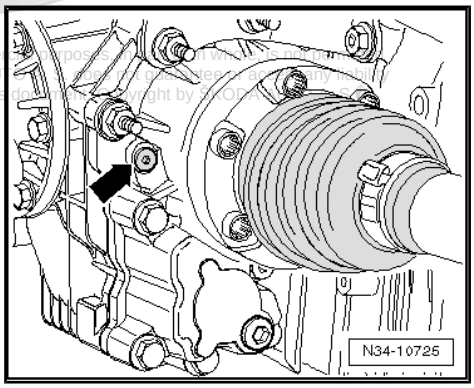
- *If the angle gearbox is correctly filled, oil flows out at the adapter -A-.*
- *If no oil flows out, lower the vehicle and continue the filling procedure.*




– Raise vehicle.
– If oil flows out, place down oil reservoir (e.g on a tool car).

One part of the excessive oil flows now back into the oil reservoir.

– If no more oil flows back, remove filling device .
– Make sure that there is still oil in the hose of the filling device .
– Screw in original oil filler plug.
– Start engine, engage a gear and allow gearbox to rotate for about 2 minutes.
– Switch off engine and unscrew oil drain plug.
– If necessary pour in oil again up to lower edge of filler hole.
– Screw in new screw -arrow- and tighten to tightening torque.




• If oil gets onto the angle gearbox and other components, it must be thoroughly removed.

– Install heat shield for drive shaft, if it was removed.
– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

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**Tightening torques**

| Component | Nm |
|---|---|
| Filler screw[1)] | 15 |
| Heat shield of drive shaft to angle gearbox | ⇒ page 108 |

[1)] Always replace screw ⇒ Electronic Catalogue of Original Parts .

# 6 Disassembling and assembling the gearbox

## 6.1 Gearbox overview

### 6.1.1 Front-wheel-drive

1 - Clutch housing

2 - Reverse shaft

3 - Output shaft 5th/6th gear/ reverse gear

4 - Slave cylinder with release bearing

5 - Drive shaft

6 - Output shaft gears 1 through 4

7 - Differential gear

8 - Rigid shaft

❑ as of 11.04 replaced by flange shaft
⇒ Item 22 (page 120)

9 - Flange shaft

10 - 2nd gear sliding gear

11 - 1st gear sliding gear

12 - 4th gear sliding gear

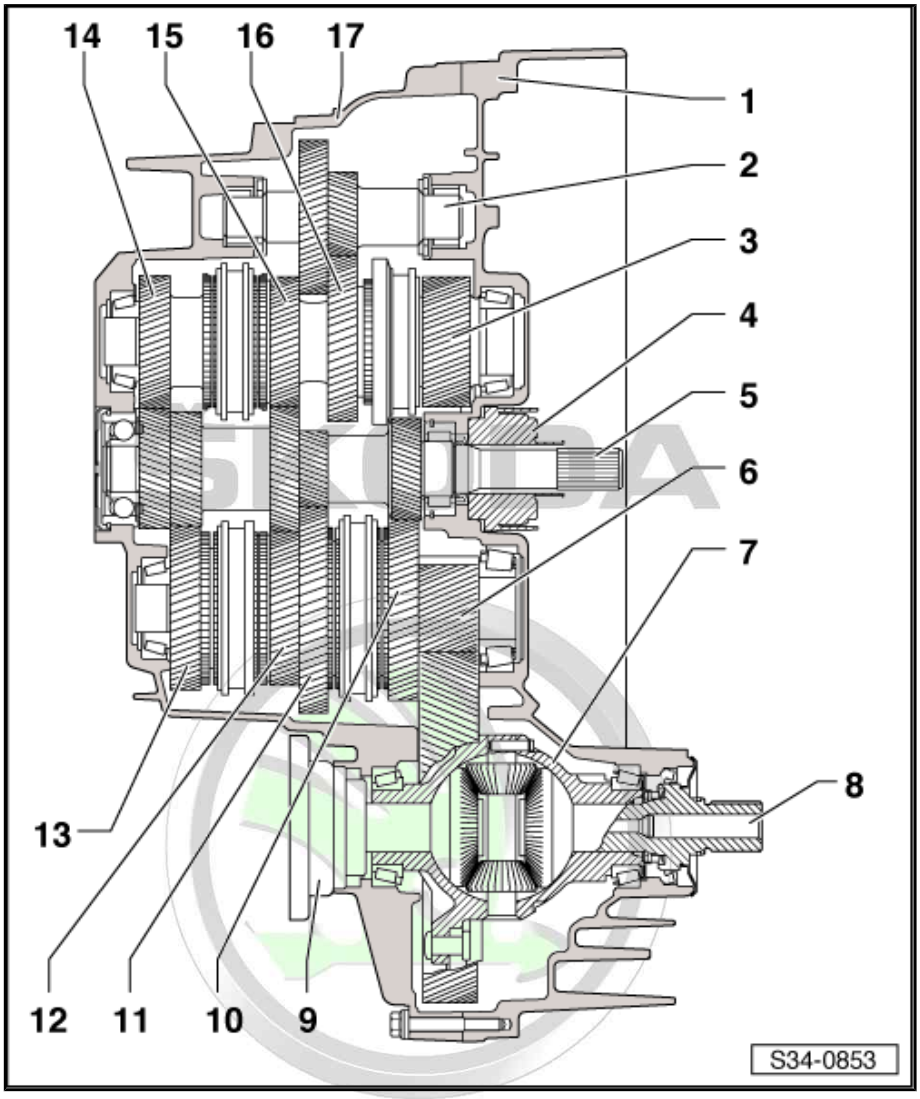
13 - 3rd gear sliding gear

14 - 5th gear sliding gear

15 - 6th gear sliding gear

16 - Reverse gear sliding gear

17 - Gearbox housing

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## 6.1.2 Four-wheel drive

1 - Clutch housing

2 - Reverse shaft

3 - Output shaft 5th/6th gear/ reverse gear

4 - Slave cylinder with release bearing

5 - Drive shaft

6 - Output shaft gears 1 through 4

7 - Differential gear

8 - Angle gearbox

9 - Right flange shaft

10 - Head bevel gear with drive shaft

11 - Shank bevel gear

12 - Output flange

13 - Flange shaft left

14 - 2nd gear sliding gear

15 - 1st gear sliding gear

16 - 4th gear sliding gear

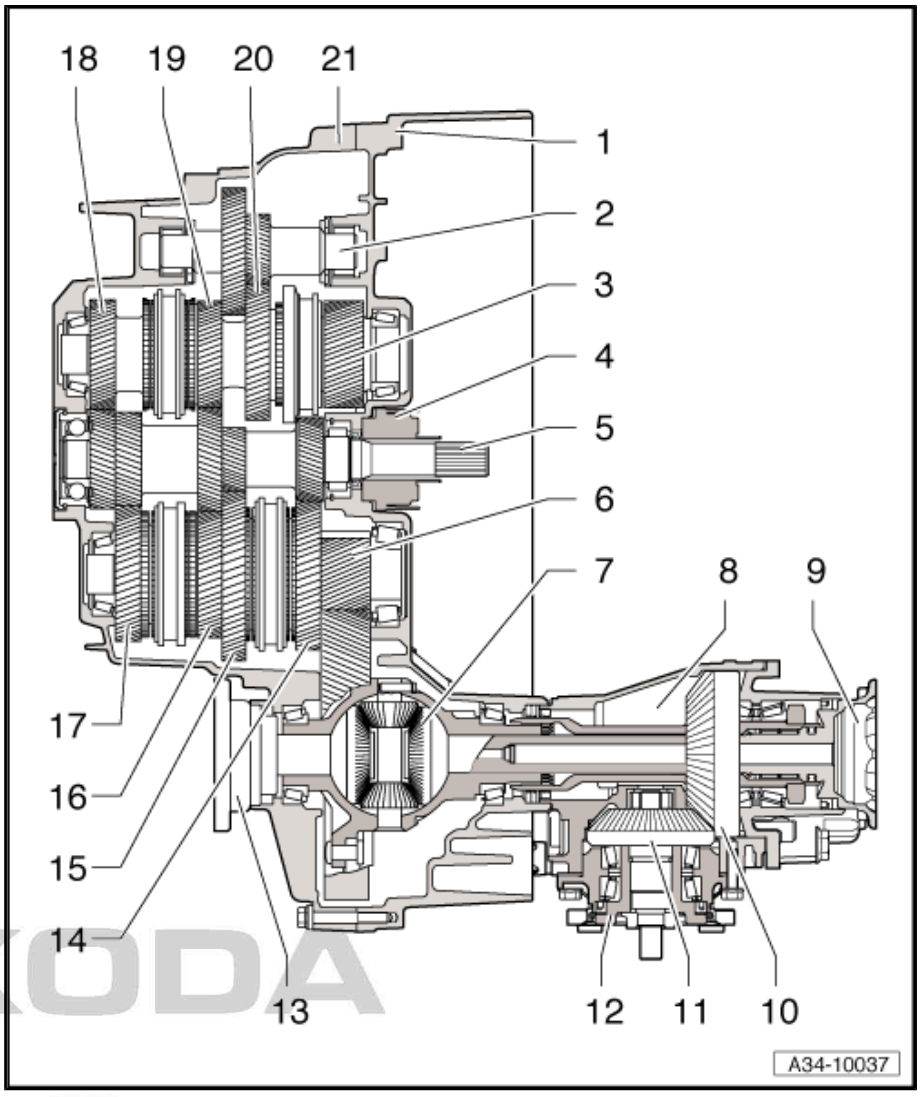
17 - 3rd gear sliding gear

18 - 5th gear sliding gear

19 - 6th gear sliding gear

20 - Reverse gear sliding gear

21 - Gearbox housing

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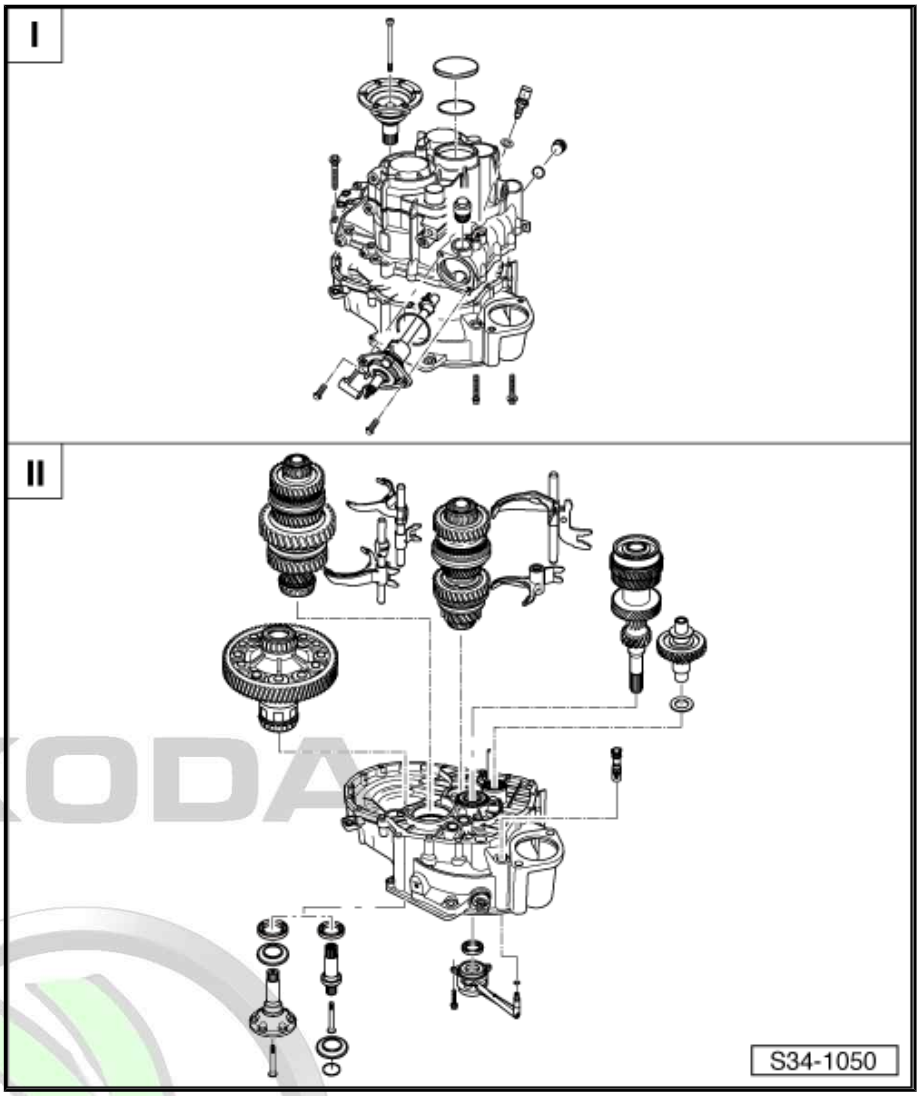
## 6.2 Summary of components

### 6.2.1 Front-wheel-drive

I - Removing and installing gearbox housing and shift mechanism ⇒ page 117

II - Removing and installing the drive shaft, output shafts, differential gear and gear shift rods ⇒ page 119

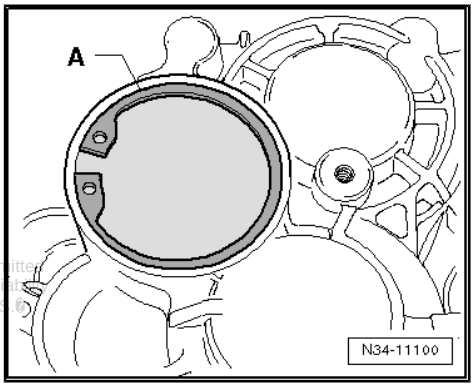



Mounting sequence up to production date 20 01 8 ⇒ page 123

Note

*The cap for the drive shaft is secured with a circlip -A- as of production date 21 01 8.*

Mounting sequence as of production date 21 01 8 (gearbox "with" circlip -A- for the cap/drive shaft ⇒ page 134

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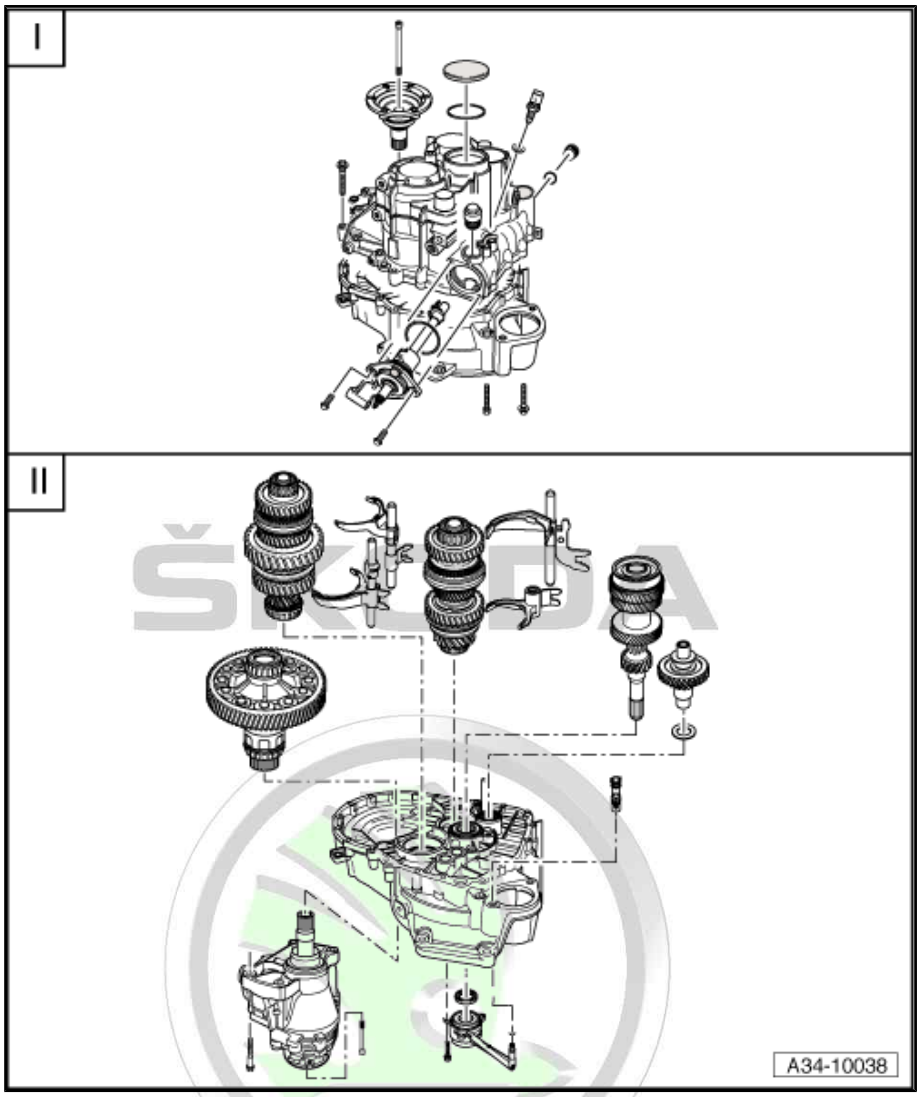
## 6.2.2 Four-wheel drive

I - Gearbox housing and gearshift mechanism - Summary of components ⇒ page 117

II - Drive shaft, output shafts, differential gear, angle gearbox and gearshift rods - Summary of components ⇒ page 119

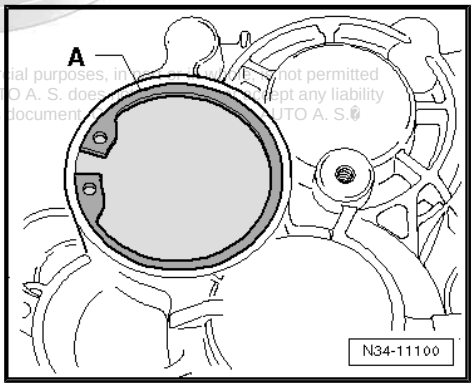



Mounting sequence up to production date 20 01 8 ⇒ page 123

Note

*The cap for the drive shaft is secured with a circlip -A- as of production date 21 01 8.*

Mounting sequence as of production date 21 01 8 (gearbox "with" circlip -A- for the cap/drive shaft ⇒ page 134

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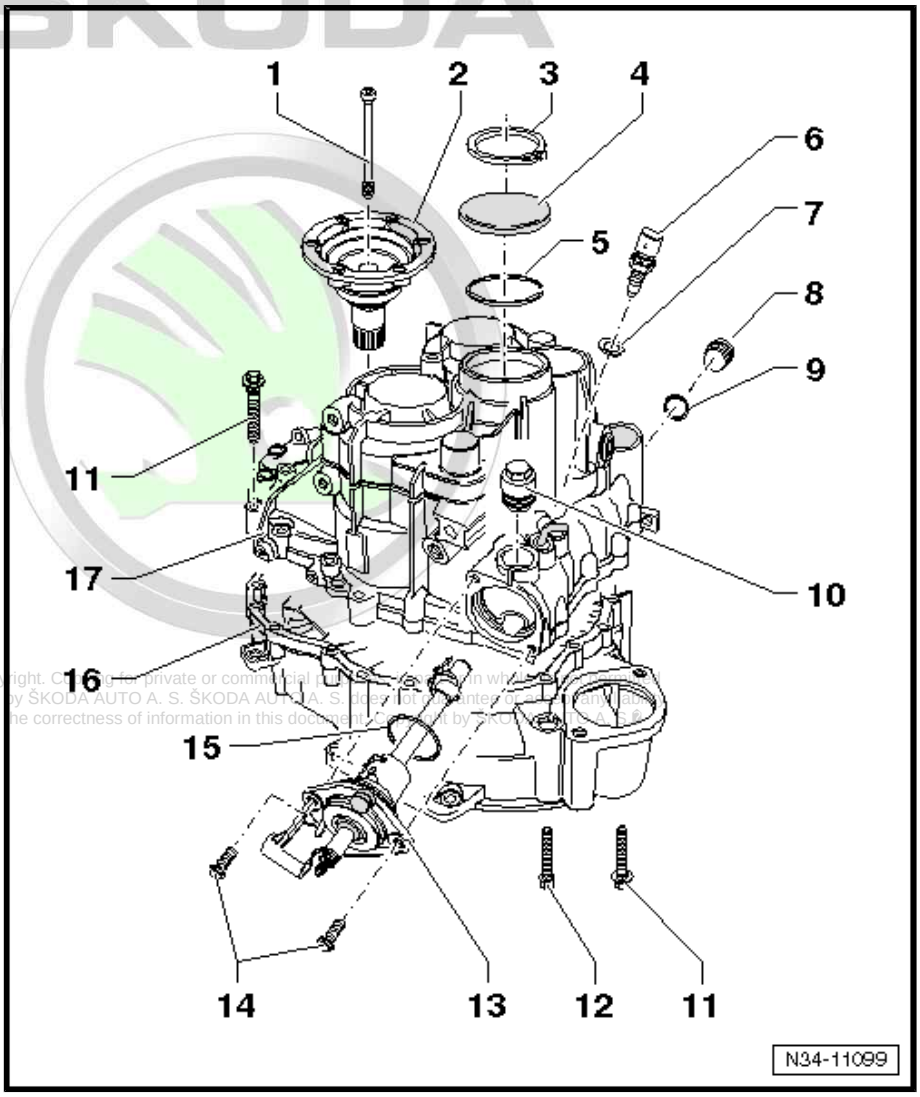
## 6.3 Removing and installing gearbox housing and shift mechanism




**1 - 33 Nm**

**2 - Flange shaft with pressure spring**

- ❑ removing and installing ⇒ page 123
- ❑ disassembling and assembling ⇒ page 211

**3 - Circlip**

- ❑ for cap Pos. 4
- ❑ installed as of production date 21 01 8

**4 - Screw cap**

- ❑ secured with circlip Pos. 3 as of production date 21 01 8

**5 - Circlip**

**6 - Reversing light switch -F4- , 20 Nm**

**7 - Sealing ring**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**8 - Oil drain plug**

- ❑ pay attention to different versions ⇒ page 118
- ❑ Internal serration screw, 45 Nm
- ❑ Allan screw, 30 Nm

**9 - Sealing ring**

- ❑ if present, always replace ⇒ Electronic Catalogue of Original Parts

**10 - Locking screw, 45 Nm**

- ❑ for gearshift shaft

**11 - 15 Nm + torque a further 90°**

- ❑ with captive washer
- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ Assignment of screws as replacement part ⇒ page 118

**12 - 15 Nm + torque a further 90°**

- ❑ without washer
- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ Assignment of screws as replacement part ⇒ page 118

**13 - Gearshift unit**

- ❑ (gearshift mechanism on the gearbox side)
- ❑ repairing ⇒ page 158
- ❑ as of 06.09, modified on the 5th/6th gear shift rod on gearboxes with bearing of the reverse gear shift fork ⇒ page 158
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

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❑ remove with the gearbox installed:

- ♦ Remove battery and battery tray
- ♦ Remove control cables and gearshift lever
- ♦ Unscrew locking screw
- ♦ Pull out gearshift unit, to do so the locking angle (for setting the gearshift mechanism) must not be inserted

**14 - 20 Nm**

❑ always replace ⇒ Electronic Catalogue of Original Parts

**15 - O-ring**

❑ always replace ⇒ Electronic Catalogue of Original Parts

**16 - Clutch housing**

❑ repairing ⇒ page 152

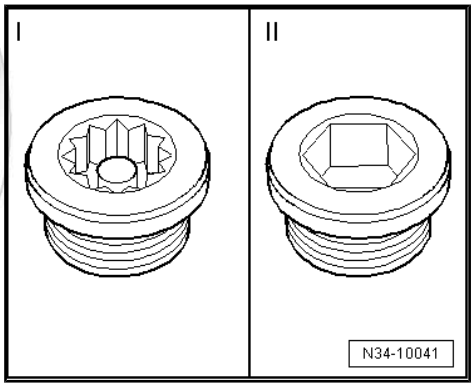
**17 - Gearbox housing**

❑ repairing ⇒ page 145

**Different versions of oil filler plug and oil drain plug.**

I - Oil filler plug and oil drain plug with internal serration

II - Oil filler plug and oil drain plug with Allan key

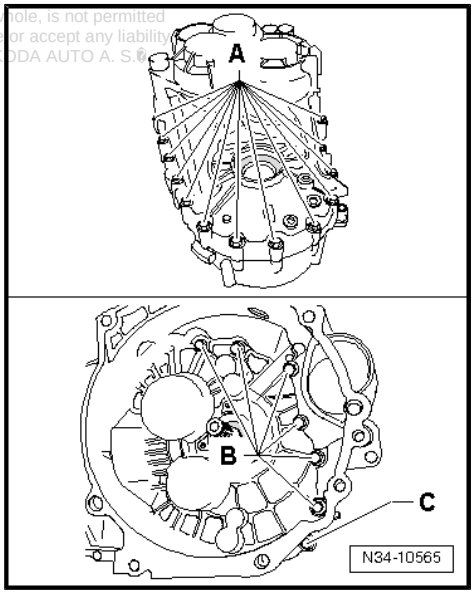



**Assignment of screws as replacement part**

A - Screw with captive washer

B - Screw without washer

C - Screw with captive washer

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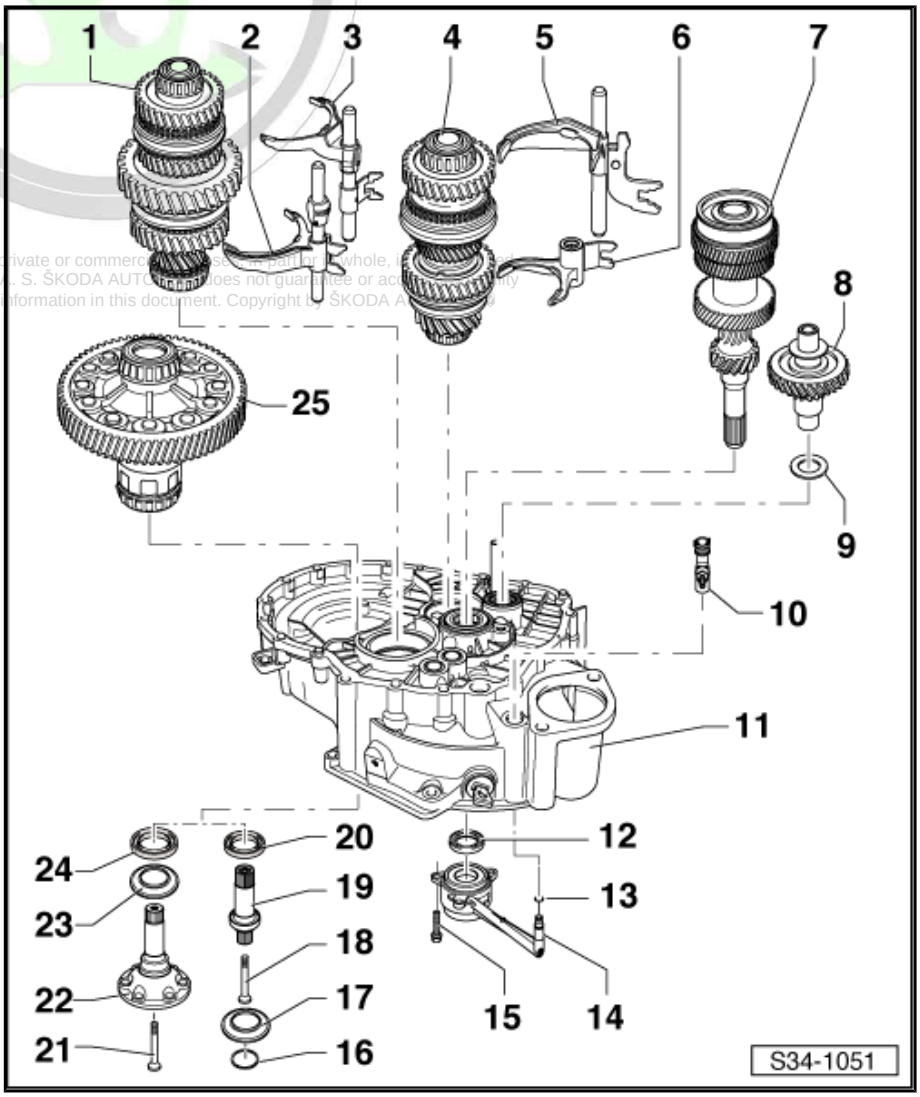
# 6.4 Removing and installing the drive shaft, output shafts, differential gear, gearshift rods and angle gearbox

## 6.4.1 Front-wheel-drive

**Note**

- *Fitting position of the shafts and gearshift rods in the gearbox where the reverse gear shift fork is positioned on the shaft for reverse gear shift fork in the clutch housing ⇒ page 121 .*
- *Fitting position of the shafts and gearshift rods in the gearbox where the reverse gear shift fork is positioned on the 5th/6th gear shift rod ⇒ page 121 .*




**1 - Output shaft gears 1 through 4**

- ❑ disassembling and assembling ⇒ page 171

**2 - Gear shift rod with shift fork for 1st and 2nd gear**

**3 - Gear shift rod with shift fork for 3rd and 4th gear**

**4 - Output shaft 5th/6th gear/ reverse gear**

- ❑ disassembling and assembling ⇒ page 186

**5 - Gear shift rod with shift fork for 5th and 6th gear**

**6 - Gearshift fork reverse gear**

**7 - Drive shaft**

- ❑ disassembling and assembling ⇒ page 165
- ❑ Always replace grooved ball bearing on the drive shaft ⇒ page 165

**8 - Reverse shaft**

- ❑ with thrust washer

**9 - Thrust washer**

**10 - Breather**

- ❑ connect with slave cylinder Pos. 14

**11 - Clutch housing**

**12 - Gasket ring for drive shaft**

- ❑ replace ⇒ page 40

**13 - O-ring**

- ❑ pull onto line connection
- ❑ moisten with brake fluid before installing

**14 - Slave cylinder with release bearing**

- ❑ removing and installing ⇒ page 39

**15 - Screw**

- ❑ for metal slave cylinder: 12 Nm (without locking agent)
- ❑ for plastic slave cylinder: 15 Nm (with locking agent)
- ❑ 3 pieces
- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ carefully tighten in small stages crosswise so that the screw-down eyes of the slave cylinder do not break off

**16 - O-ring**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**17 - Cap**

- ❑ can be pushed onto the rigid shaft, or removed by hand

**18 - 33 Nm**

**19 - Rigid shaft with pressure spring**

- ❑ removing and installing ⇒ page 123
- ❑ complete ⇒ page 211
- ❑ as of 11.04 replaced by flange shaft pos. 22

**20 - Sealing ring**

- ❑ for the right rigid shaft
- ❑ replace ⇒ page 198

**21 - 33 Nm**

**22 - Flange shaft**

- ❑ assign ⇒ Electronic Catalogue of Original Parts

**23 - Cap**

- ❑ release with screwdriver alternatively from the flange shaft
- ❑ push on by hand up to the stop
- ❑ must lock with the flange shaft

**24 - Sealing ring**

- ❑ for right flange shaft
- ❑ replace ⇒ page 199

**25 - Differential gear**

- ❑ disassembling and assembling ⇒ page 211

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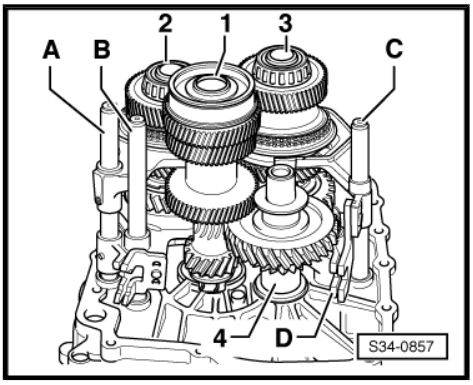
**Fitting position of shafts and gear shift rods in the gearbox up to 05.09**




1 - Drive shaft

2 - Output shaft gears 1 through 4

3 - Output shaft 5th/6th gear/reverse gear

4 - Reverse shaft

A - Selector rod 3rd and 4th gear

B - Selector rod 1st and 2nd gear

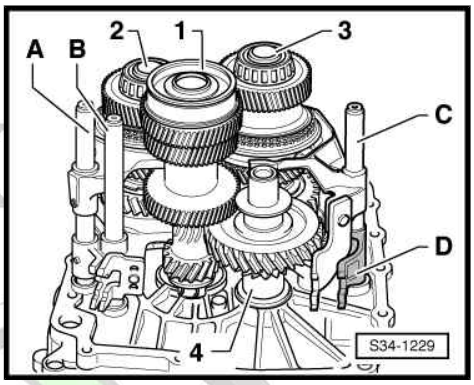
C - Selector rod 5th and 6th gear

D - Gearshift fork reverse gear

**Note**

*The reverse gear shift fork Pos. D is positioned on the shaft for reverse gear shift fork in the clutch housing.*

**Fitting position of shafts and gear shift rods in the gearbox as of 06.09**




1 - Drive shaft

2 - Output shaft gears 1 through 4

3 - Output shaft 5th/6th gear/reverse gear

4 - Reverse shaft

A - Selector rod 3rd and 4th gear

B - Selector rod 1st and 2nd gear

C - Selector rod 5th and 6th gear

D - Gearshift fork reverse gear

**Note**

*The reverse gear shift fork Pos. D is positioned on the 5th/6th gear shift rod Pos. C.*

## 6.4.2 Four-wheel drive

**Note**

- *Fitting position of the shafts and gearshift rods in the gearbox where the reverse gear shift fork is positioned on the shaft for reverse gear shift fork in the clutch housing ⇒ page 121 .*
- *Fitting position of the shafts and gearshift rods in the gearbox where the reverse gear shift fork is positioned on the 5th/6th gear shift rod ⇒ page 121 .*

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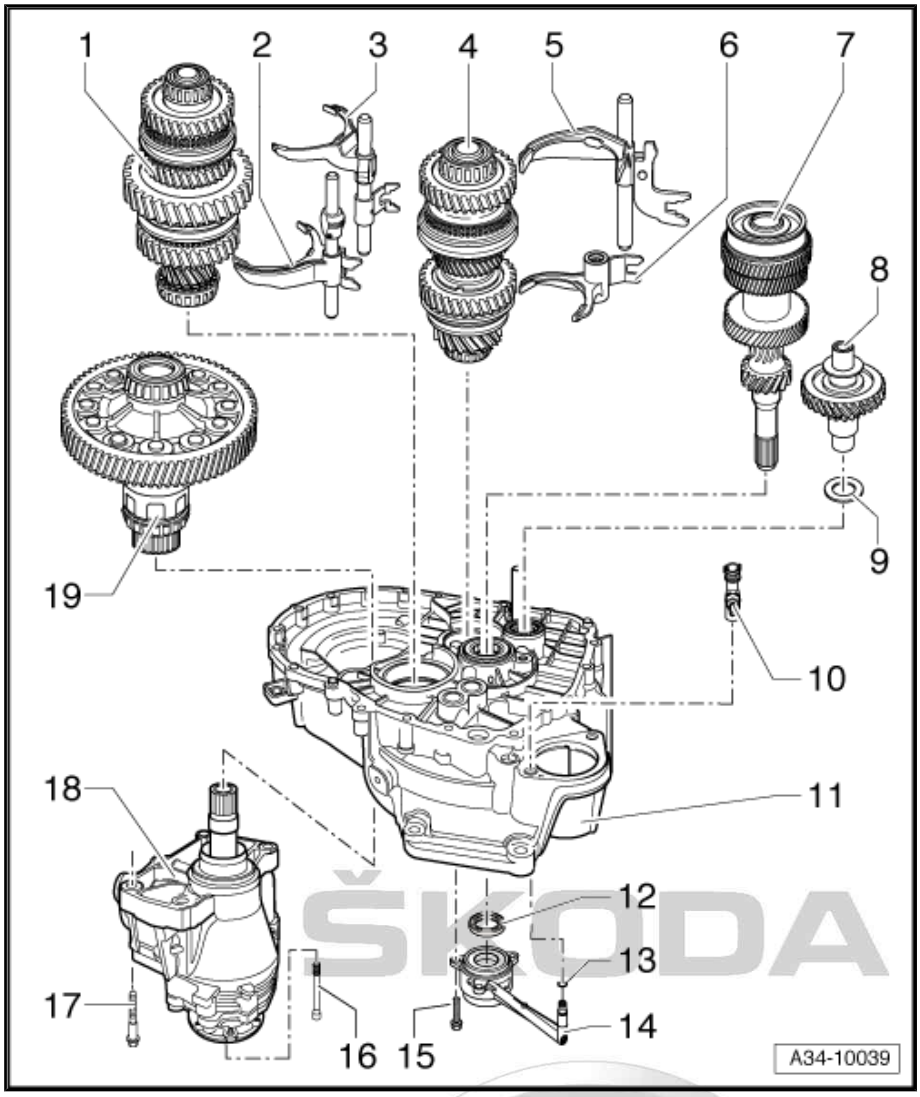


**1 - Output shaft gears 1 through 4**

- ❑ disassembling and assembling ⇒ page 171

**2 - Gear shift rod with shift fork for 1st and 2nd gear**

**3 - Gear shift rod with shift fork for 3rd and 4th gear**

**4 - Output shaft 5th/6th gear/ reverse gear**

- ❑ disassembling and assembling ⇒ page 186

**5 - Gear shift rod with shift fork for 5th and 6th gear**

**6 - Gearshift fork reverse gear**

**7 - Drive shaft**

- ❑ disassembling and assembling ⇒ page 165
- ❑ Always replace grooved ball bearing on the drive shaft ⇒ page 165

**8 - Reverse shaft**

- ❑ with thrust washer

**9 - Thrust washer**

**10 - Breather**

- ❑ connect with slave cylinder Pos. 14

**11 - Clutch housing**

- ❑ repairing ⇒ page 152

**12 - Gasket ring for drive shaft**

- ❑ replace ⇒ page 40

**13 - O-ring**

- ❑ pull onto line connection
- ❑ moisten with brake fluid before installing

**14 - Slave cylinder with release bearing**

- ❑ removing and installing ⇒ page 39

**15 - Screw**

- ❑ for metal slave cylinder: 12 Nm (without locking agent)
- ❑ for plastic slave cylinder: 15 Nm (with locking agent)
- ❑ 3 pieces
- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ carefully tighten in small stages crosswise so that the screw-down eyes of the slave cylinder do not break off

**16 - 33 Nm**

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**17 - 40 Nm + torque a further 90°**

- ❑ 4 pieces
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**18 - Angle gearbox**

- ❑ Removing and installing with gearbox fitted ⇒ page 101

❑ Removing and installing with gearbox removed ⇒ page 123

**19 - Differential gear**

❑ disassembling and assembling ⇒ page 211

## 6.5 Mounting sequence up to production date 20 01 8

**Removing and installing the gearbox housing, shift mechanism, drive shaft, output shafts, differential gear, gear shift rods and angle gearbox**

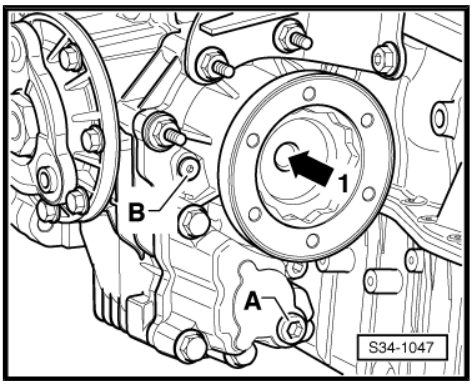
**Special tools and workshop equipment required**

- Press-on sleeve -MP3-412 (VW 455)-
- Multi-purpose tool -MP3-419 (VW 771)-
- Supporting bridge -MP3-425 (30-211A)-
- Assembly stand -MP9-101-
- Thrust piece -T10042-
- Socket insert -T10107A-
- Retaining plate -T30108-
- Gearbox mount -T30109 (VW 353)-
- Thrust piece -T40008-
- Separating device , e.g. -Kukko 17/0 -
- Hot-air blower
- Catch pan
- Ring bolt -3368-
- Sealant -AMV 188 200 03-
- Grease for plug serration of clutch disc -G 000 100-

### 6.5.1 Disassembling gearbox

**Four-wheel drive**

– Remove the right flange shaft bolt -arrow- using the socket insert -T10107A- .




**Note**

*The right flange shaft remains in the angle gearbox.*

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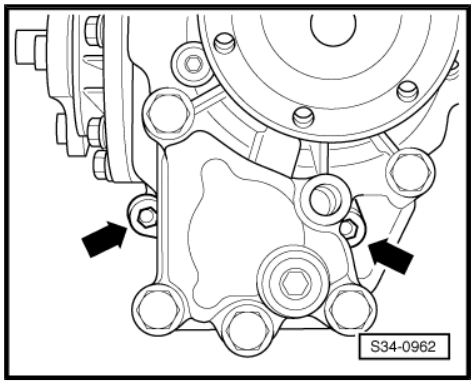
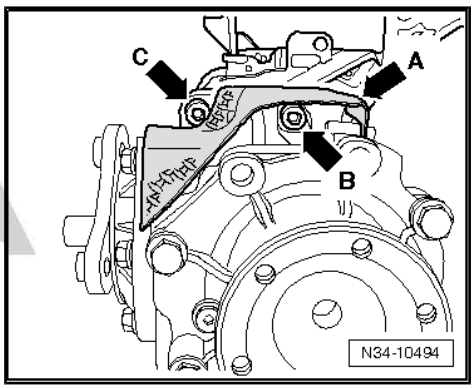
– Unscrew the bottom engine/gearbox connecting screws -arrows-.




On certain vehicles a heat shield -arrow A- is located on the top side of the angle gearbox.

The screw -arrow B- is accessible below the heat shield.

The screw -arrow C- is accessible above the heat shield.



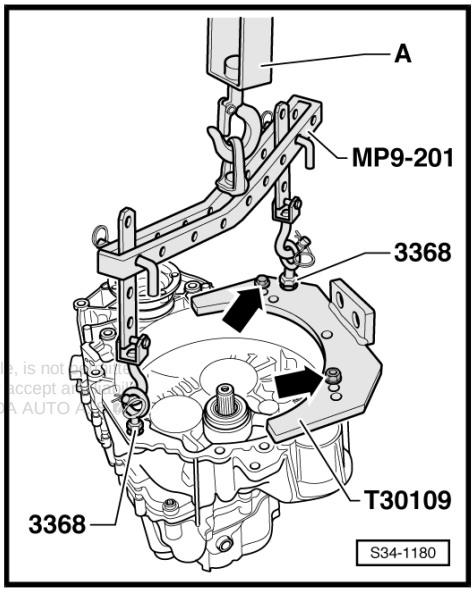

– Carefully press off angle gearbox from manual gearbox, while doing so secure it against falling.

**Continued for all gearboxes**

**Note**

*Before disassembling the gearbox first the gearbox mount -T30109 (VW 353)- should be secured to the gearbox* *⇒ page 124* .

**Secure the gearbox mount -T30109 (VW 353)- to the gearbox.**

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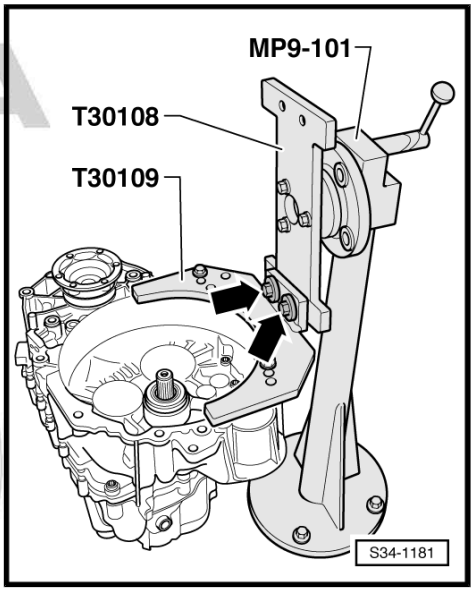
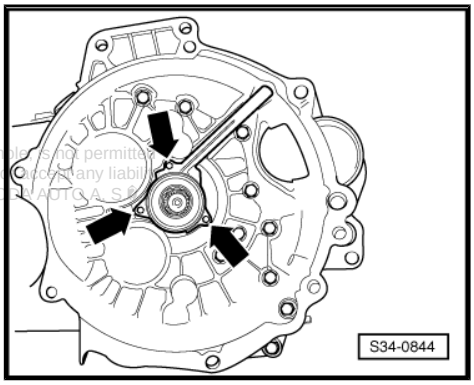
– Attach gearbox to assembly stand -MP9-101- .
– Place catch pan underneath.
– Drain out gear oil.




– Remove slave cylinder with release bearing -arrows-.

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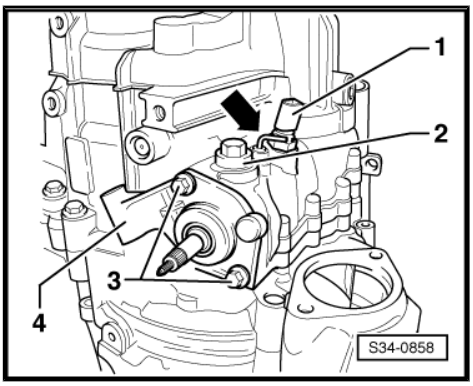
**Please make sure during the following work step that the gearshift shaft is not blocked by the locking angle -arrow-.**

– Put the gearshift shaft into Neutral.
– Remove switch for reversing lights -F4- -1-.
– Unscrew locking screw -2-.
– Release screws -3-.
– Pull the gearshift shaft -4- out of the gearbox housing.
– Remove the left flange shaft.




**Front-wheel-drive**

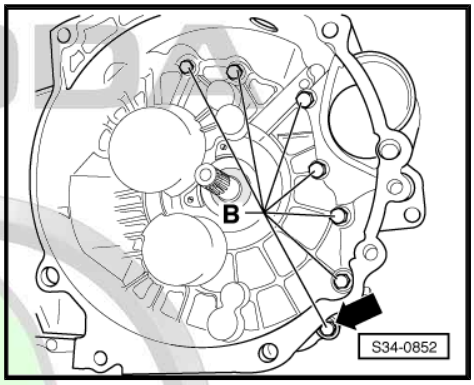
– Remove rigid shaft or right flange shaft.

**Note**

*For gearboxes as of production date 11.04, the rigid shaft (right) was replaced by a flange shaft.*

**Continued for all gearboxes**

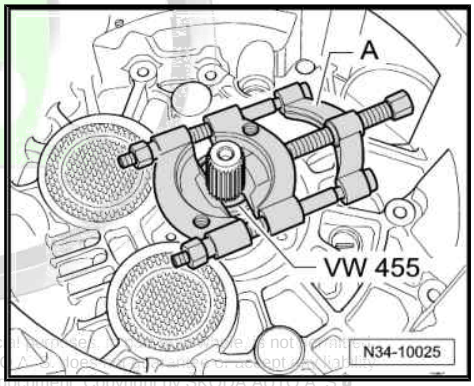
– Unscrew screws -B-, that serve to secure the gearbox housing from the clutch housing.




**Note**

*The hexagon bolt -arrow- is located outside the screw-on flange. It is fitted with a washer.*

– Interlock the drive shaft by fitting the press-on sleeve -VW 455 (MP3-412)- via the drive shaft onto the clutch housing.

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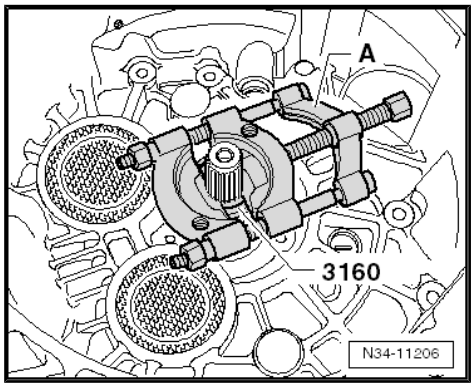
**Note**

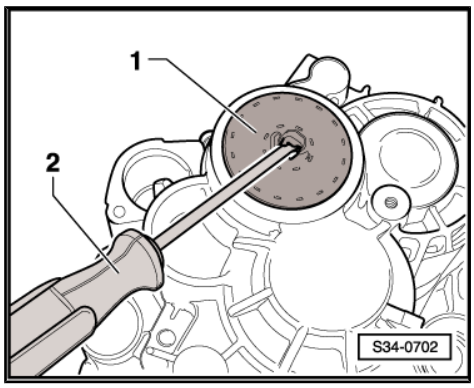
*If necessary the bushing -3160 (T30102)- must be used instead of the insertion bushing -VW 455 (MP3-412)- so that the separating device -A- can be tensioned behind the splines of the drive shaft.*

– Tighten the separating device -A-, e. g. -Kukko 17/0- behind the splines of the drive shaft.

While doing so the reverse side of the separating device must rest on the insertion bushing -VW 455 (MP3-412)- or on the bushing -3160 (T30102)- with no play.




– Push the rubber through the middle of the cap -1- using a screwdriver .
– Carefully lever up the cap from the gearbox housing using the screwdriver -2-.

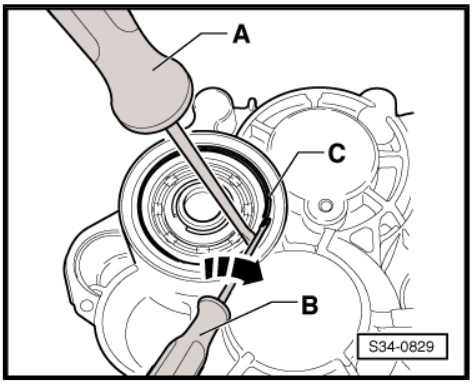


Remove the circlip -C- from the grooved ball bearing of the drive shaft/gearbox housing as follows:

– with the screw driver -A- hold one end of the circlip.

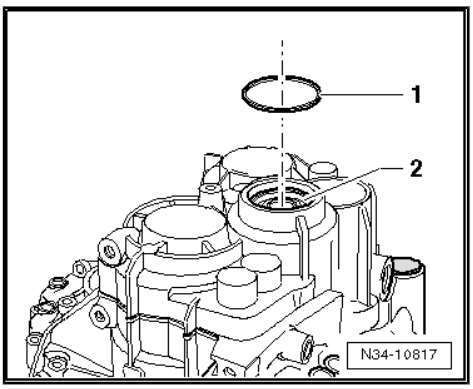
– With the screw driver -B- lever the other end out of the slot of the grooved ball bearing -direction of arrow-.

– Move screwdriver -B- around, levering out the circlip step by step.

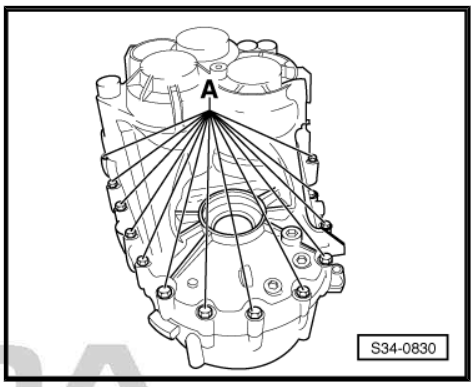



– If applicable, remove the washer -1- from the gearbox housing -2-.

• If the gearbox housing is replaced, check whether the washer -1- must be fitted again ⇒ page 130 .



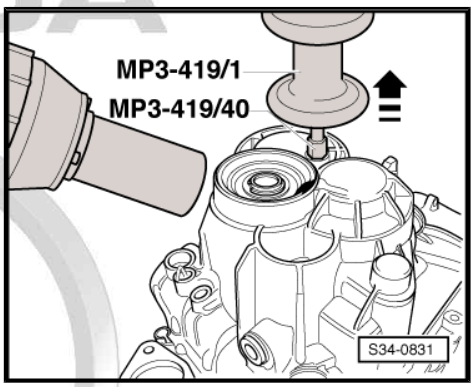

– Remove the fixing screws -A- for the gearbox housing on the clutch housing.




– Screw adapter -MP3-419/40 - into the threaded hole of the gearbox housing.

– Heat the gearbox housing with the hot-air blower at the bearing assembly for grooved ball bearing/drive shaft to about 100°C for around 10 minutes.

– Remove the gearbox housing from the clutch housing using the multi-purpose tool -MP3-419/1- -direction of arrow-.




**Note**

*If necessary carefully release with assembly lever alternatively from the projecting housing lands and make sure the sealing surfaces are not damaged in the process.*

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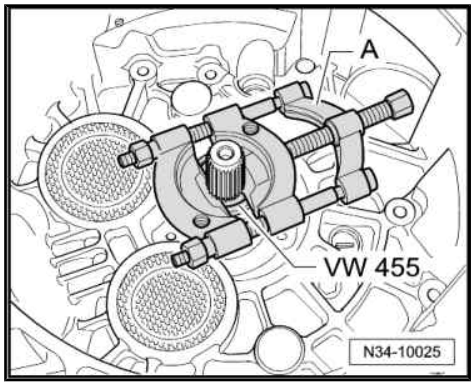
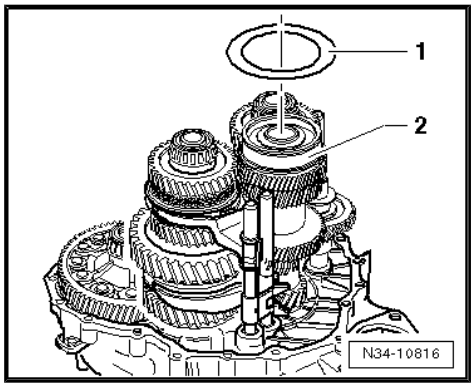
– Remove the separating device -A- and the insertion bushing -VW 455 (MP3-412)- or the bushing -3160 (T30102)- from the drive shaft.




– If applicable, remove the washer -1- from the grooved ball bearing -2-.

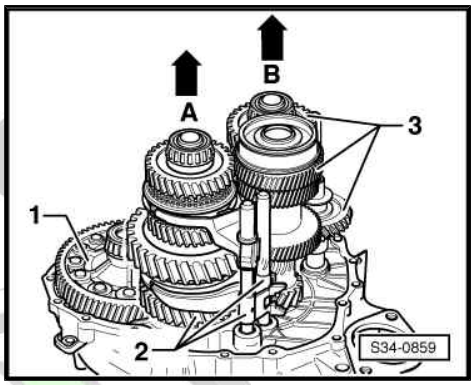
– If the gearbox housing is replaced, check whether the washer -1- must be fitted again ⇒ page 130 .

For the removal of the shafts from the clutch housing a second mechanic is required.




– Lift the differential gear -1- with the left hand. With the right hand lift output shaft gears 1 through 4 together with gear shift rods -2- -arrow A-.

– At the same time the 2nd mechanic lifts the drive shaft, the reverse shaft and the output shaft 5th/6th gear -3- together with the gear shift rods out of the clutch housing -arrow B-.




**Note**

*If necessary the differential gear can be placed again in the clutch housing after lifting the shafts.*

– Removing gasket ring for drive shaft.

**Note**

*The grooved ball bearing on the drive shaft must always be replaced ⇒ page 165 .*

## 6.5.2 Assembling gearbox

- A new grooved ball bearing must be pressed onto the drive shaft ⇒ page 165 .

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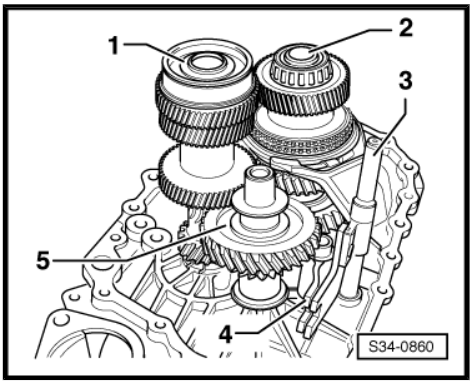
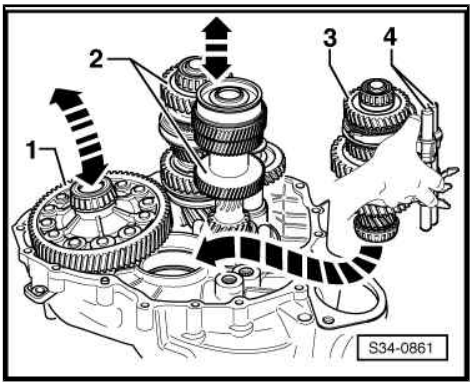
– Insert the drive shaft -1-, the output shaft 5th/6th gear -2- together with gear shift rod -3-, shift fork -4- and reverse shaft -5-.



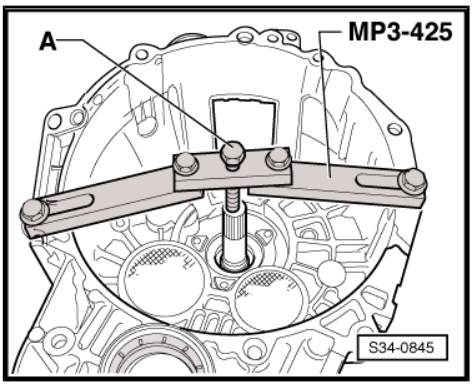

– Insert differential gear -1-.
– Take the output shaft gears 1 through 4 -3- with the gear shift rods -4- in the right hand as shown.
– Slightly lift the differential gear with the left hand.
– At the same time the 2nd mechanic lifts the drive shaft, the output shaft 5th/6th gear and reverse gear -2- together with the reverse shaft.
– Insert the output shaft gears 1 through 4 in -the direction of the arrow-.




The serrations of the drive shaft, output shafts and final drive/ differential gear must be in mesh.

– Place the shafts and the differential gear in their bearing assembly.

– Secure the supporting bridge -MP3-425- for drive shaft to the clutch housing.




**Note**

*To provide a clearer illustration, the clutch housing is shown at an angle of 180°.*

– Screw in screw -A- until the drive shaft is lifted slightly.

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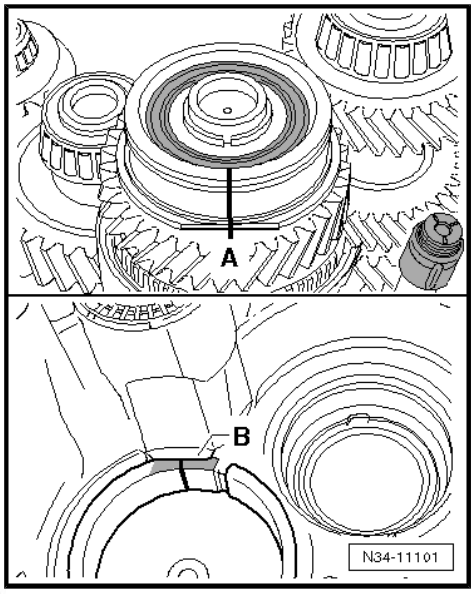
**On certain gearboxes, flattened parts -A- are present at the grooved ball bearing for the drive shaft and at the bearing support -B-.**

Check the grooved ball bearing for the drive shaft and the gearbox housing.

| Grooved ball bearing for the drive shaft and the gearbox housing |
|---|
| no flattened parts at the grooved ball bearing -A- and at the bearing support -B- ⇒ page 130 |
| Flattened parts at the grooved ball bearing -A- and at the bearing support -B- ⇒ page 131 |



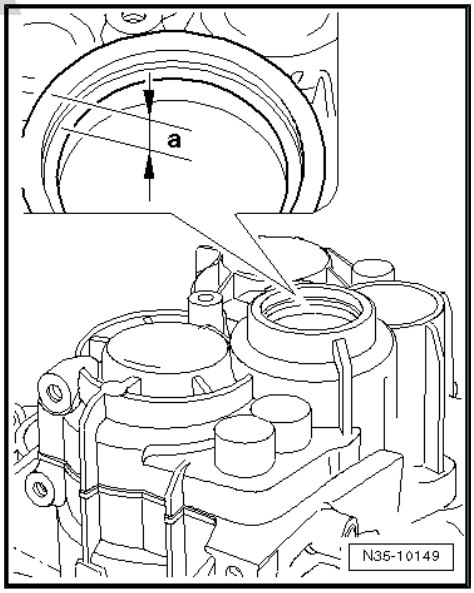

**As of production date 20 03 06 up to approx. production date 20 01 8:**

**A washer is inserted above and below the grooved ball bearing for the drive shaft** ⇒ page 165 .

| | | |
|---|---|---|
| Top washer | Outer diameter | 78.6 mm |
| Bottom washer | Outer diameter | 85 mm |

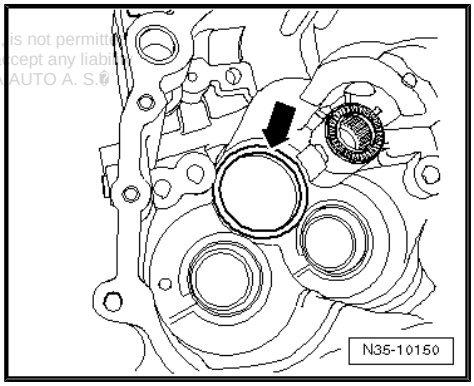
**Measure the shoulder above the support for the grooved ball bearing**

| Shoulder above the grooved ball bearing | Dimension “a” | Top washer |
|---|---|---|
| up to production date 19 03 6 | 10 mm | no |
| as of production date 20 03 6 | 10.7 mm | yes |




**In the gearbox housing the area below the bearing pedestal for the grooved ball bearing is also changed -arrow-**

| Area below the bearing pedestal | | Bottom washer |
|---|---|---|
| up to production date 19 03 6 | not chamfered. | no |
| as of production date 20 03 6 | chamfered slightly deeper. | yes |

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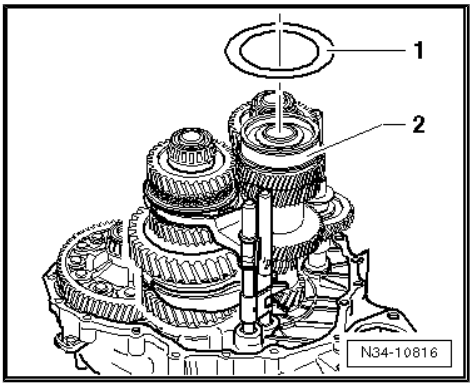
– If necessary place a washer (outside diameter = 85 mm) -1- onto the grooved ball bearing -2-.




**For certain gearboxes:**

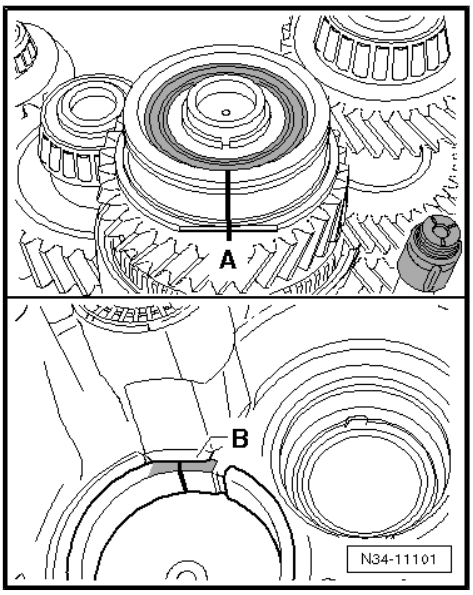
**If flattened parts -A- are present at the grooved ball bearing/drive shaft and at the bearing support -B- for the grooved ball bearing in the gearbox housing.**

- Washers must not be placed above and below the grooved ball bearing on these gearboxes.
- The flattened parts -A- at the grooved ball bearing and at the bearing support -B- must be aligned in the gearbox housing.

– Mark these flattened parts in different colours.

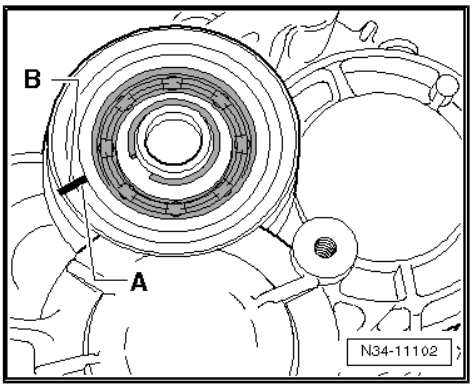
– Transfer the markings onto the upper area of the grooved ball bearing and onto the upper area of the bearing support of the gearbox housing (⇒ next figure).

– On all gearboxes, heat the gearbox housing with the hot-air blower in the area of the bearing assembly for grooved ball bearing/drive shaft to 100°C for approx. 10 minutes.




**Note**

- *Warming up is necessary so that the grooved ball bearing is not damaged when installing the gearbox housing.*
- *Apply sealant -AMV 188 200 03- uniformly on the sealing surface of the clutch housing.*
- *Align the marking of the grooved ball bearing -A- to the marking on the gearbox housing -B- and position gearbox housing.*

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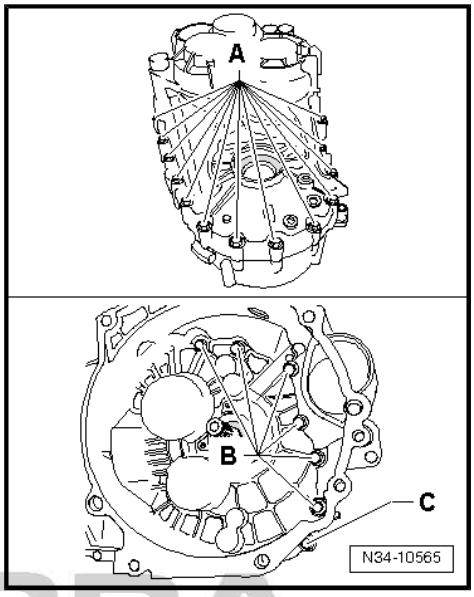
– Tighten new screws -A-, -B- and -C- for the gearbox housing at the clutch housing to tightening torque.

Assignment of screws:

A - Screw with captive washer

B - Screw without washer

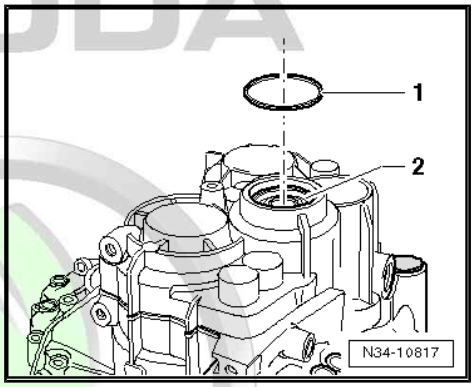
C - Screw with captive washer




– If necessary place a washer -1- (outside diameter = 78.6 mm) above the grooved ball bearing -2-.

**Note**

- *If a washer must be placed onto the grooved ball bearing ⇒ page 130 .*
- *The washer -1- above the grooved ball bearing -2- is no longer fitted if there is a flattened part on the grooved ball bearing and the gearbox housing ⇒ page 131 .*

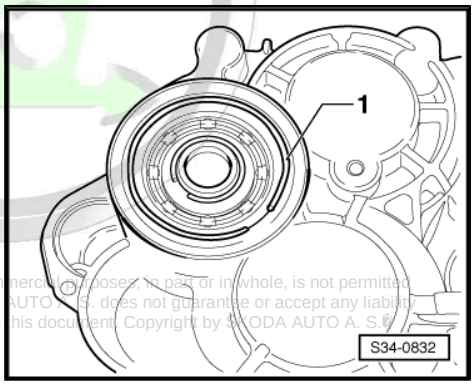



– Install circlip -1- for grooved ball bearing/drive shaft.

– Remove supporting bridge - MP3-425- for drive shaft.

– In case the serrated sleeve for the gearshift shaft was removed, drive it in with the drift ⇒ page 147 up to the stop of the tool.

– Turn the gearbox with the opening for the gearshift shaft in the assembly stand upwards.

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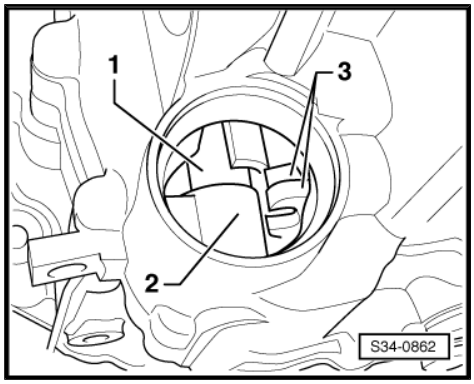
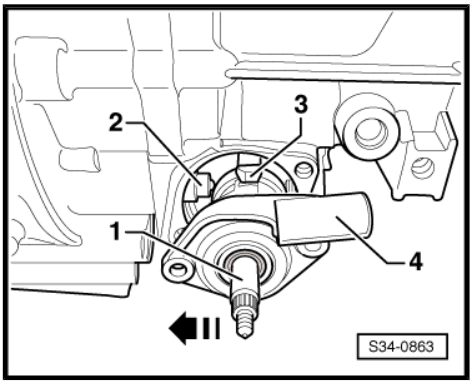
– Insert the gearshift shaft -1- into the bottom bearing -2- and into the gearshift forks -3-. The cap in the illustration is removed for purposes of clear presentation.



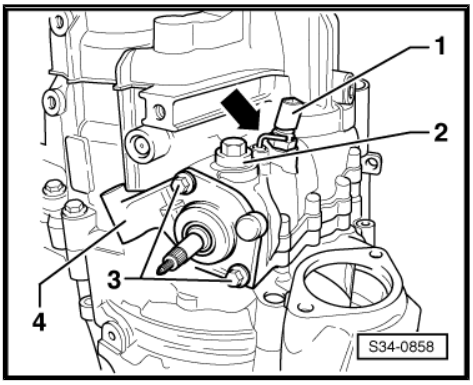
– Press the gearshift shaft -1- against the serrated sleeve -2- -direction of arrow- and guide with the shift finger -3- through the gearshift forks up to the stop downwards.
• The gearshift cover -4- must be positioned at the same time parallel to the screw-on surface at the gearbox housing.
• The gearshift shaft must slide easily into the selector movement (upwards and downwards).




**Note**

*If the gearshift cover is positioned obliquely to the screw-on surface, the gearshift shaft is not inserted into the bottom bearing.*

– Tighten screws -3- for the cover/gearshift shaft -4-.
– Screw in locking screw -2-, at the same time the locking angle -arrow- must be laid out.
– Install switch for reversing lights -F4- -1-.

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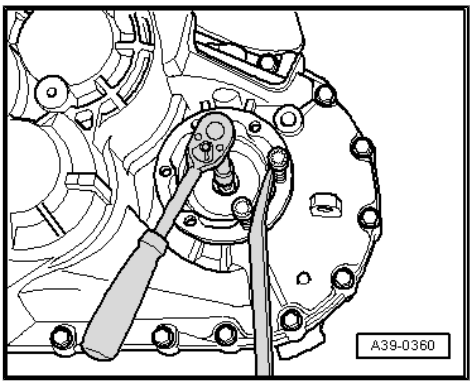
– Install left flange shaft with pressure spring, stop disc and conical ring.

**Front-wheel-drive**

– Install rigid shaft or right flange shaft with pressure spring, stop disc and conical ring.

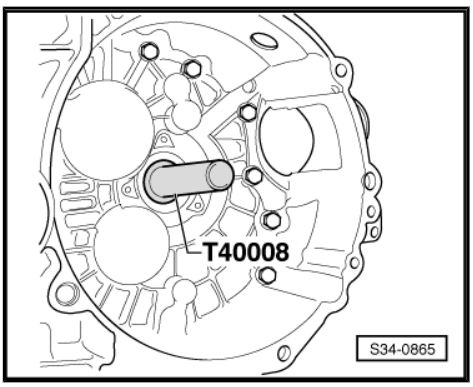



**Note**

*For gearboxes as of production date 11.04, the rigid shaft (right) was replaced by a flange shaft.*

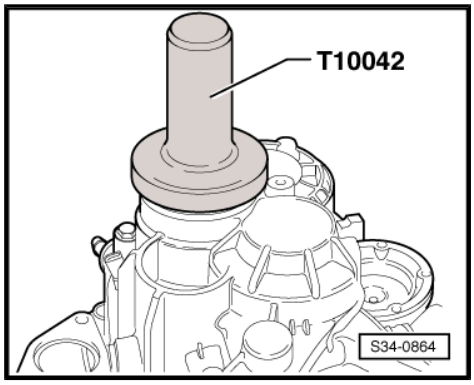
**Continued for all gearboxes**

– Drive in the gasket ring for the drive shaft.
– Install slave cylinder with release bearing ⇒ page 39 .
– Shift through all gears consecutively.



– Drive the cap into the gearbox housing as far as the stop of the pressure plate -T10042- .

– Remove gearbox from assembly stand.




**Four-wheel drive**

Install angle gearbox as follows at the manual gearbox:

– On manual gearbox, lightly grease the rigid serration at differential gear with grease for the plug serration of the clutch disc - G 000 100- .

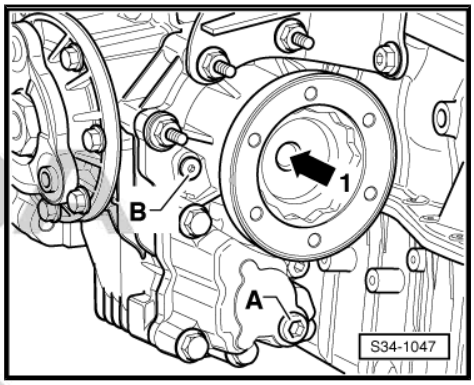
– Push angle gearbox fully onto the manual gearbox, while doing so slowly turn the flange shaft (carefully press angle gearbox onto gearbox up to stop).

**Note**

- *Do not pull angle gearbox with the fixing screws against the manual gearbox, otherwise the angle gearbox can tilt and the fixing eyes can break off.*
- *Tighten gearbox/angle gearbox connecting screws crosswise (always replace screws ⇒ Electronic Catalogue of Original Parts ).*

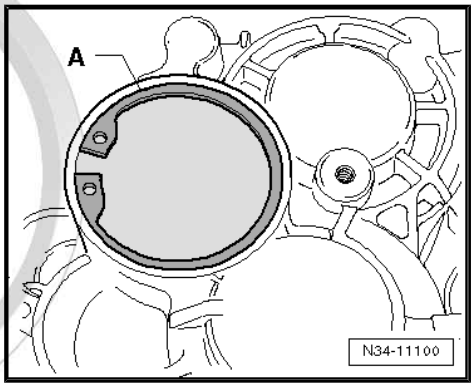
– Attach angle gearbox to gearbox and tighten connecting screws crosswise to tightening torque ⇒ Item 17 (page 122) .

– Tighten the screw of the flange shaft -arrow 1- with socket insert -T10107A- to tightening torque ⇒ Item 16 (page 122) .




## 6.6 Mounting sequence as of production date 21 01 8 (gearbox “with” circlip -A- for the cap/drive shaft)

**Removing and installing the gearbox housing, shift mechanism, drive shaft, output shafts, differential gear, gear shift rods and angle gearbox**




**Special tools and workshop equipment required**

- Press-on sleeve -MP3-412 (VW 455)-
- Multi-purpose tool -MP3-419 (VW 771)-
- Supporting bridge -MP3-425 (30-211A)-
- Assembly stand -MP9-101-
- Socket insert -T10107A-

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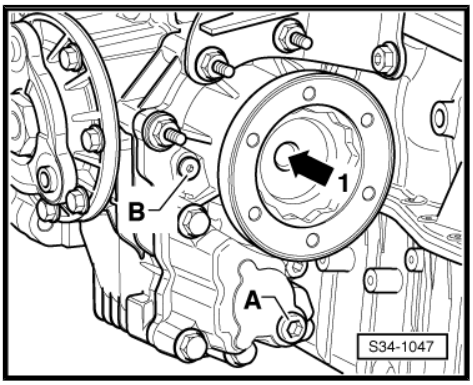
- Thrust piece -T10143-
- Retaining plate -T30108-
- Gearbox mount -T30109 (VW 353)-
- Thrust piece -T40008-
- Separating device , e.g. -Kukko 17/0 -
- Hot-air blower
- Catch pan
- Ring bolt -3368-
- Sealant -AMV 188 200 03-
- Grease for plug serration of clutch disc -G 000 100-

## 6.6.1 Disassembling gearbox

**Four-wheel drive**

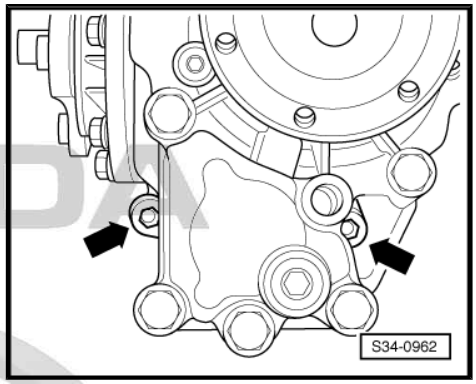
– Remove the right flange shaft bolt -arrow- using the socket insert -T10107A- .




**Note**

*The right flange shaft remains in the angle gearbox.*

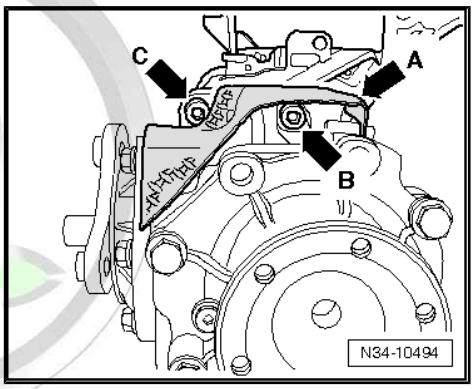
– Unscrew the bottom engine/gearbox connecting screws -arrows-.




On certain vehicles a heat shield -arrow A- is located on the top side of the angle gearbox.

The screw -arrow B- is accessible below the heat shield.

The screw -arrow C- is accessible above the heat shield.




– Carefully press off angle gearbox from manual gearbox, while doing so secure it against falling.

**Continued for all gearboxes**

**Note**

*Before disassembling the gearbox first the gearbox mount -T30109 (VW 353)- should be secured to the gearbox*
*⇒ page 136 .*

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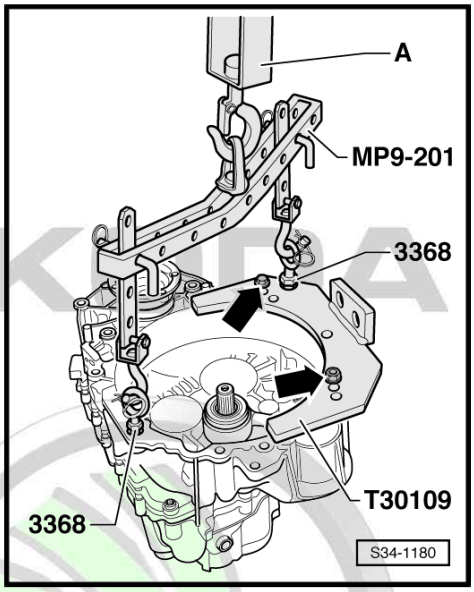
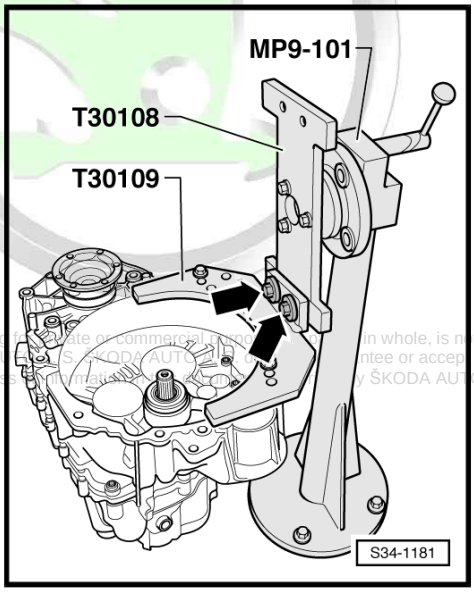
**Secure the gearbox mount -T30109 (VW 353)- to the gearbox.**




– Attach gearbox to assembly stand -MP9-101- .
– Place catch pan underneath.
– Drain out gear oil.

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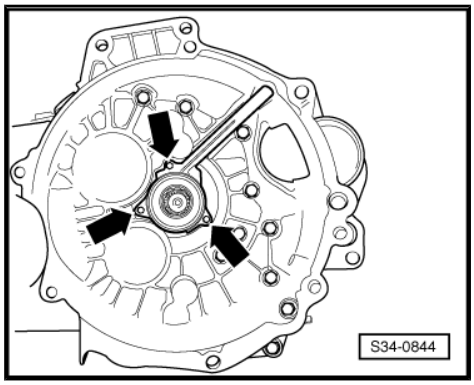
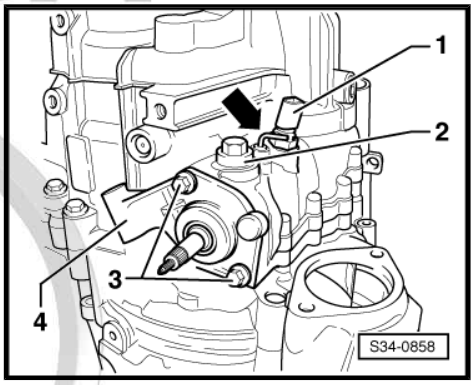
– Remove slave cylinder with release bearing -arrows-.



**Please make sure during the following work step that the gearshift shaft is not blocked by the locking angle -arrow-.**



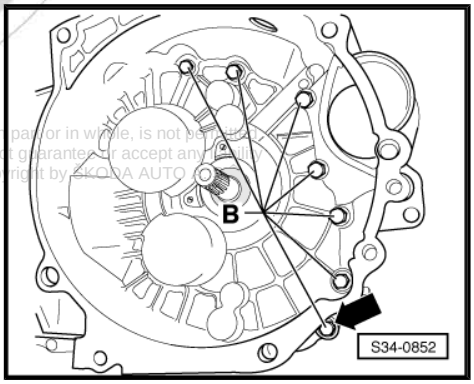

- Put the gearshift shaft into Neutral.
- Remove switch for reversing lights -F4- -1-.
- Unscrew locking screw -2-.
- Unscrew bolts -3-.
- Pull the gearshift shaft -4- out of the gearbox housing.
- Remove the left flange shaft.

**Front-wheel-drive**

- Removing the right flange shaft.

**Continued for all gearboxes**

- Unscrew screws -B-, that serve to secure the gearbox housing from the clutch housing.




**Note**

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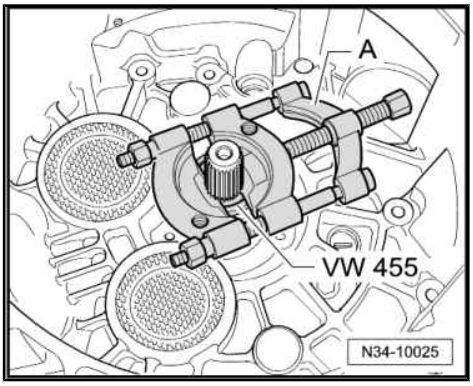
*The hexagon bolt -arrow- is located outside the screw-on flange. It is fitted with a washer.*

- Interlock the drive shaft by fitting the press-on sleeve - VW 455 (MP3-412)- via the drive shaft onto the clutch housing.

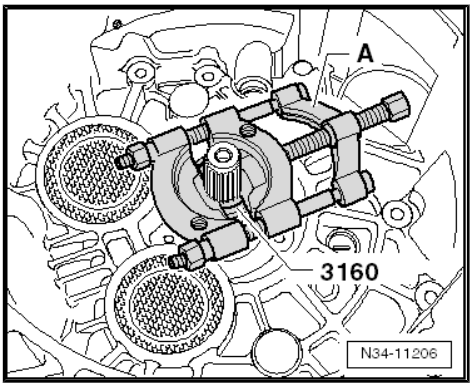



**Note**

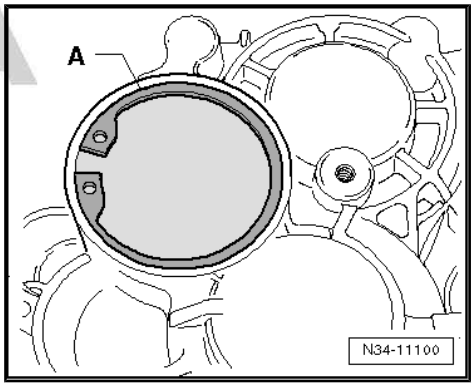
*If necessary the bushing -3160 (T30102)- must be used instead of the insertion bushing -VW 455 (MP3-412)- so that the separating device -A- can be tensioned behind the splines of the drive shaft.*

- Tighten the separating device -A-, e. g. -Kukko 17/0- behind the splines of the drive shaft.

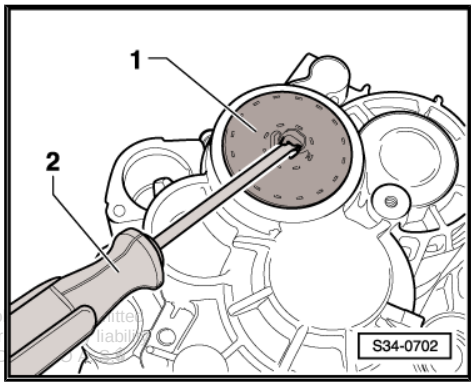
While doing so the reverse side of the separating device must rest on the insertion bushing -VW 455 (MP3-412)- or on the bushing -3160 (T30102)- with no play.



– Remove circlip -A- for the cap/drive shaft.




– Push the rubber through the middle of the cap -1- using a screwdriver .
– Carefully lever up the cap from the gearbox housing using the screwdriver -2-.

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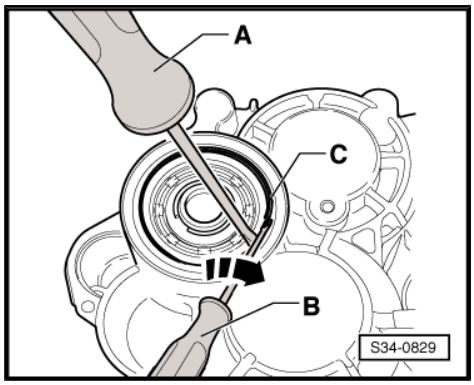
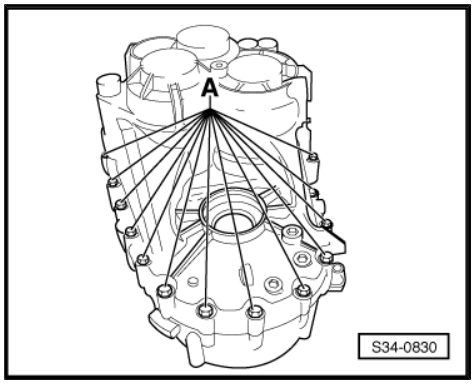
Remove the circlip -C- from the grooved ball bearing of the drive shaft/gearbox housing as follows:

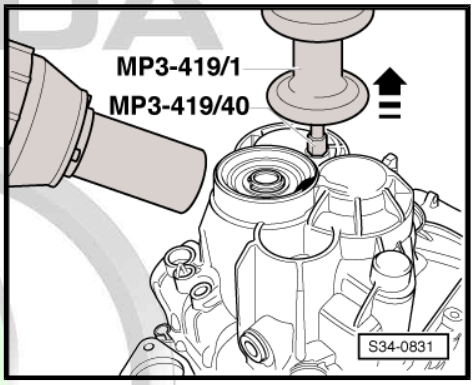
– with the screw driver -A- hold one end of the circlip.
– With the screw driver -B- lever the other end out of the slot of the grooved ball bearing -direction of arrow-.
– Move screwdriver -B- around, levering out the circlip step by step.




– Remove the fixing screws -A- for the gearbox housing on the clutch housing.



– Screw adapter -MP3-419/40 - into the threaded hole of the gearbox housing.
– Heat the gearbox housing with the hot-air blower at the bearing assembly for grooved ball bearing/drive shaft to about 100°C for around 10 minutes.
– Remove the gearbox housing from the clutch housing using the multi-purpose tool -MP3-419/1- -direction of arrow-.

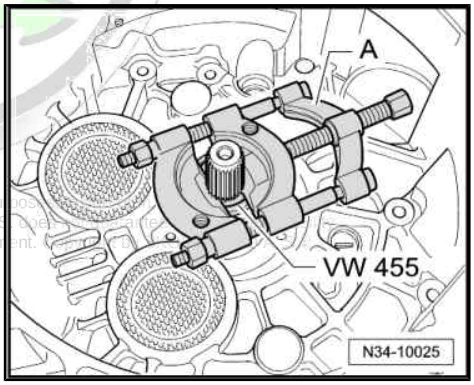



**Note**

*If necessary carefully release with assembly lever alternatively from the projecting housing lands and make sure the sealing surfaces are not damaged in the process.*

– Remove the separating device -A- and the insertion bushing - VW 455 (MP3-412)- or the bushing -3160 (T30102)- from the drive shaft.

For the removal of the shafts from the clutch housing a second mechanic is required.

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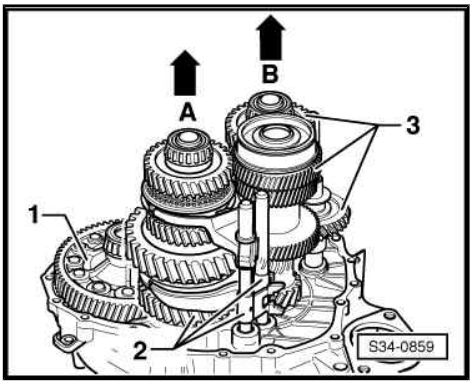
– Lift the differential gear -1- with the left hand. With the right hand lift output shaft gears 1 through 4 together with gear shift rods -2- -arrow A-.
– At the same time the 2nd mechanic lifts the drive shaft, the reverse shaft and the output shaft 5th/6th gear -3- together with the gear shift rods out of the clutch housing -arrow B-.




**Note**

*If necessary the differential gear can be placed again in the clutch housing after lifting the shafts.*

– Removing gasket ring for drive shaft.

**Note**

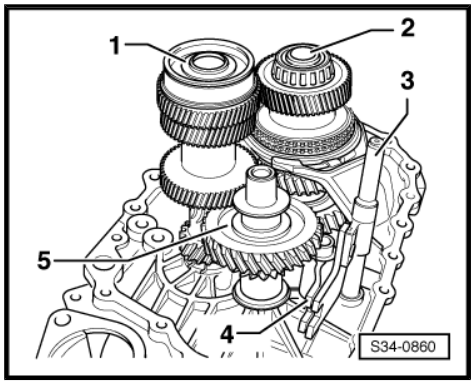
*The grooved ball bearing on the drive shaft must always be replaced* ⇒ page 165 .

## 6.6.2 Assembling gearbox

• A new grooved ball bearing must be pressed onto the drive shaft ⇒ page 165 .

### Gearbox up to 05.09

– Insert the drive shaft -1-, the output shaft 5th/6th gear -2- together with gear shift rod -3-, shift fork -4- and reverse shaft -5-.

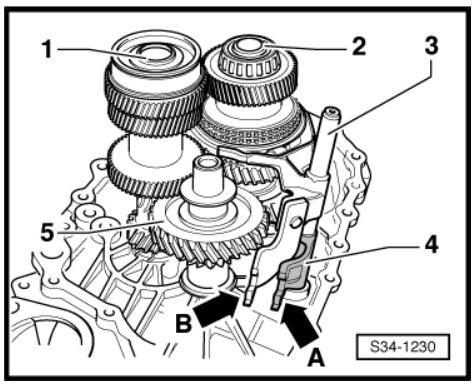



### Gearbox as of 06.09

– Place the reverse gear shift fork -4- on the 5th/6th gear shift rod -3- in its installed position ⇒ page 140 .

– Insert the drive shaft -1-, the output shaft 5th/6th gear -2- together with gear shift rod -3-, shift fork -4- and reverse shaft -5-.

• The shift gate -arrow A- of the reverse gear shift fork points to the outer side of the gearbox. The shift gate -arrow B- of the 5th/6th gear shift rod must point to the inner side of the gearbox.




### Continued for all gearboxes

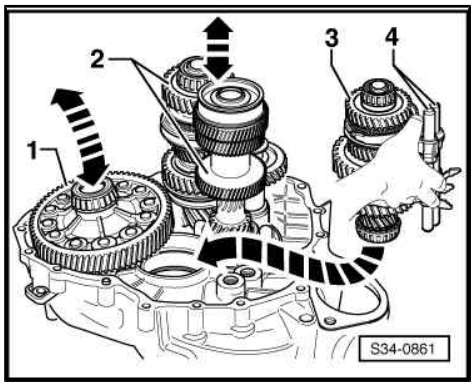
– Insert differential gear -1-.

– Take the output shaft gears 1 through 4 -3- with the gear shift rods -4- in the right hand as shown.

– Slightly lift the differential gear with the left hand.

– At the same time the 2nd mechanic lifts the drive shaft, the output shaft 5th/6th gear and reverse gear -2- together with the reverse shaft.

– Insert the output shaft gears 1 through 4 in -the direction of the arrow-.




The serrations of the drive shaft, output shafts and final drive/ differential gear must be in mesh.

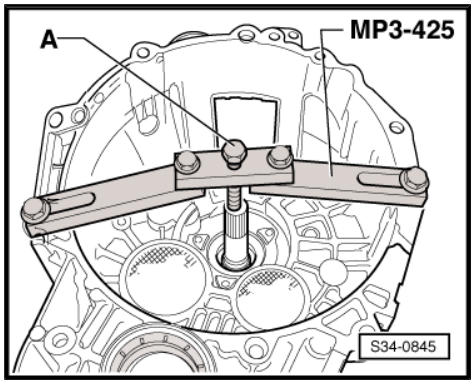
– Place the shafts and the differential gear in their bearing assembly.

– Secure the supporting bridge -MP3-425- for drive shaft to the clutch housing.

**Note**

*To provide a clearer illustration, the clutch housing is shown at an angle of 180°.*

– Screw in screw -A- until the drive shaft is lifted slightly.

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**The grooved ball bearing/drive shaft only fits in one position in the gearbox housing**

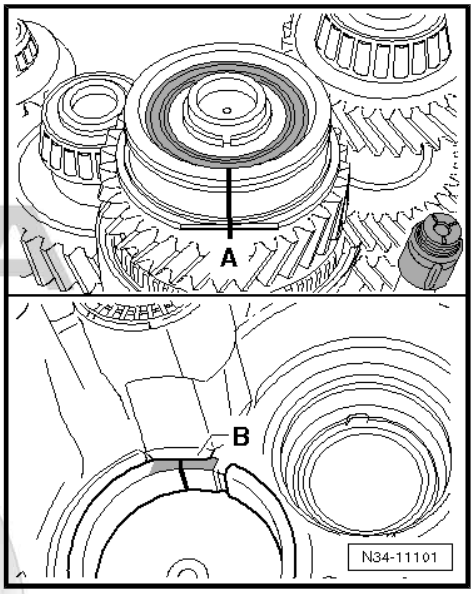
One flattened part is located at the grooved ball bearing/drive shaft and at the bearing support for the grooved ball bearing in the gearbox housing.

- If the flattened parts -A- and -B- are present, a washer must not be inserted above and below the grooved ball bearing/ drive shaft ⇒ page 169 .
- The flattened parts -A- at the grooved ball bearing and at the bearing support -B- must be aligned in the gearbox housing.

– Mark these flattened parts in different colours.

– Transfer the markings onto the upper area of the grooved ball bearing and onto the upper area of the bearing support of the gearbox housing (⇒ next figure).

– Heat the gearbox housing with the hot-air blower in the area of the bearing assembly for grooved ball bearing/drive shaft to 100°C for approx. 10 minutes.




**Note**

- *Warming up is necessary so that the grooved ball bearing is not damaged when installing the gearbox housing.*
- *Apply sealant -AMV 188 200 03- uniformly on the sealing surface of the clutch housing.*
- *Align the marking of the grooved ball bearing -A- to the marking on the gearbox housing -B- and position gearbox housing.*

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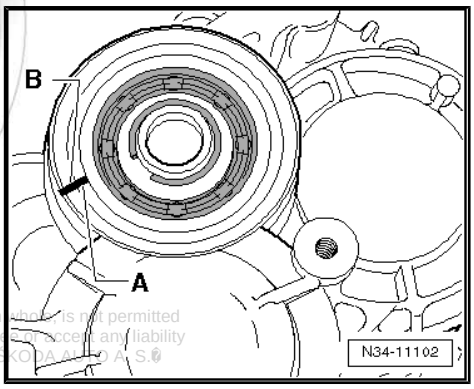


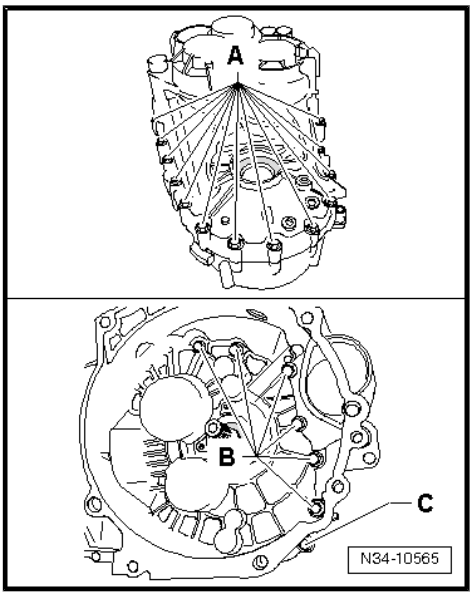

– Tighten new screws -A-, -B- and -C- for the gearbox housing at the clutch housing to tightening torque.

Assignment of screws:

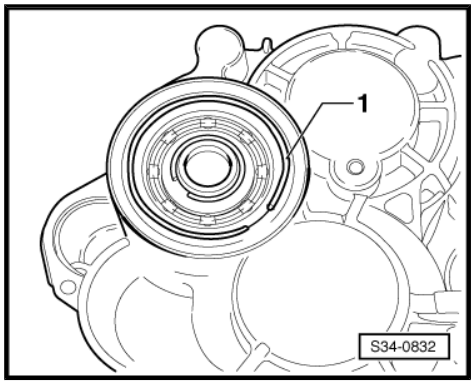
A - Screw with captive washer

B - Screw without washer

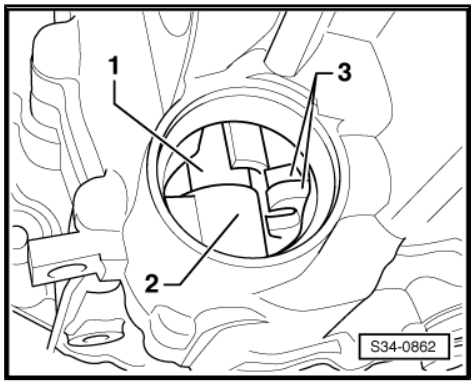
C - Screw with captive washer



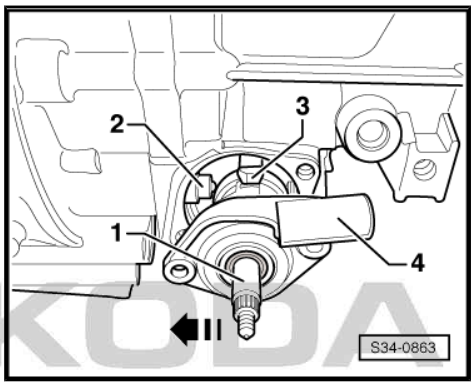
– Install circlip -1- for grooved ball bearing/drive shaft.
– Remove supporting bridge -MP3-425- for drive shaft.
– In case the serrated sleeve for the gearshift shaft was removed, drive it in with the drift ⇒ page 147 up to the stop of the tool.
– Turn the gearbox with the opening for the gearshift shaft in the assembly stand upwards.




– Insert the gearshift shaft -1- into the bottom bearing -2- and into the gearshift forks -3-. The cap in the illustration is removed for purposes of clear presentation.



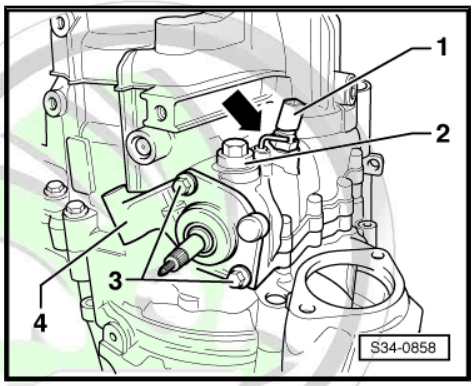

– Press the gearshift shaft -1- against the serrated sleeve -2- -direction of arrow- and guide with the shift finger -3- through the gearshift forks up to the stop downwards.
• The gearshift cover -4- must be positioned at the same time parallel to the screw-on surface at the gearbox housing.
• The gearshift shaft must slide easily into the selector movement (upwards and downwards).




**Note**

*If the gearshift cover is positioned obliquely to the screw-on surface, the gearshift shaft is not inserted into the bottom bearing.*

– Tighten screws -3- for the cover/gearshift shaft -4-.
– Screw in locking screw -2-, at the same time the locking angle -arrow- must be laid out.
– Install switch for reversing lights -F4- -1-.

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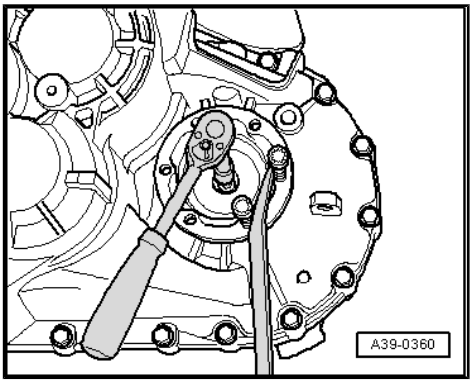
– Install left flange shaft with pressure spring, stop disc and conical ring.

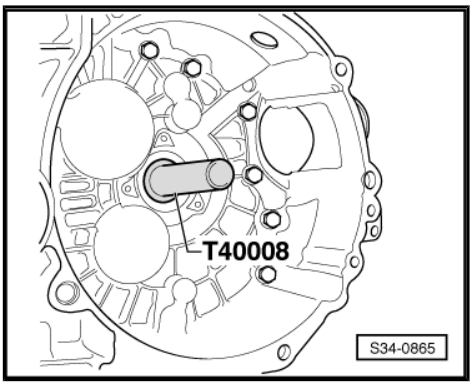
**Front-wheel-drive**

– Install right flange shaft with pressure spring, stop disc and conical ring.

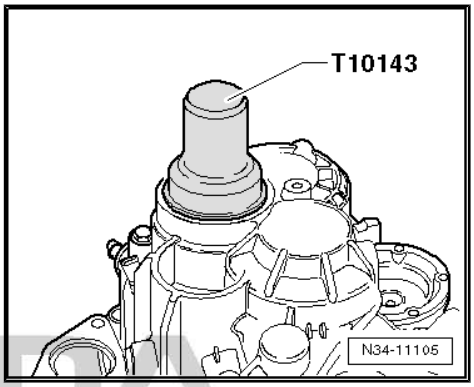
**Continued for all gearboxes**




– Drive in the gasket ring for the drive shaft.
– Install slave cylinder with release bearing ⇒ page 39 .
– Shift through all gears consecutively.




– Drive the cap into the gearbox housing up to the stop.

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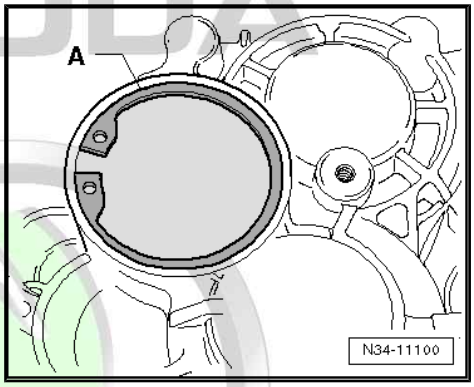
– Secure cap with circlip -A-.

– Remove gearbox from assembly stand.




**Four-wheel drive**

Install angle gearbox as follows at the manual gearbox:

– On manual gearbox, lightly grease the rigid serration at differential gear with grease for the plug serration of the clutch disc - G 000 100- .

– Push angle gearbox fully onto the manual gearbox, while doing so slowly turn the flange shaft (carefully press angle gearbox onto gearbox up to stop).

**Note**

- *Do not pull angle gearbox with the fixing screws against the manual gearbox, otherwise the angle gearbox can tilt and the fixing eyes can break off.*
- *Tighten gearbox/angle gearbox connecting screws crosswise (always replace screws ⇒ Electronic Catalogue of Original Parts ).*

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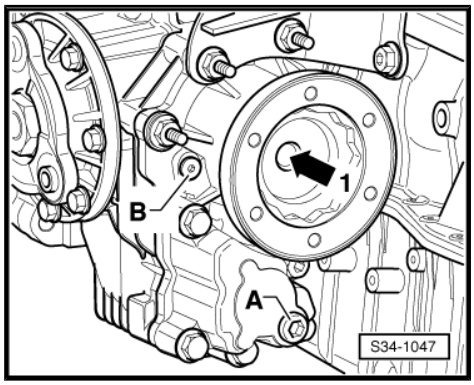
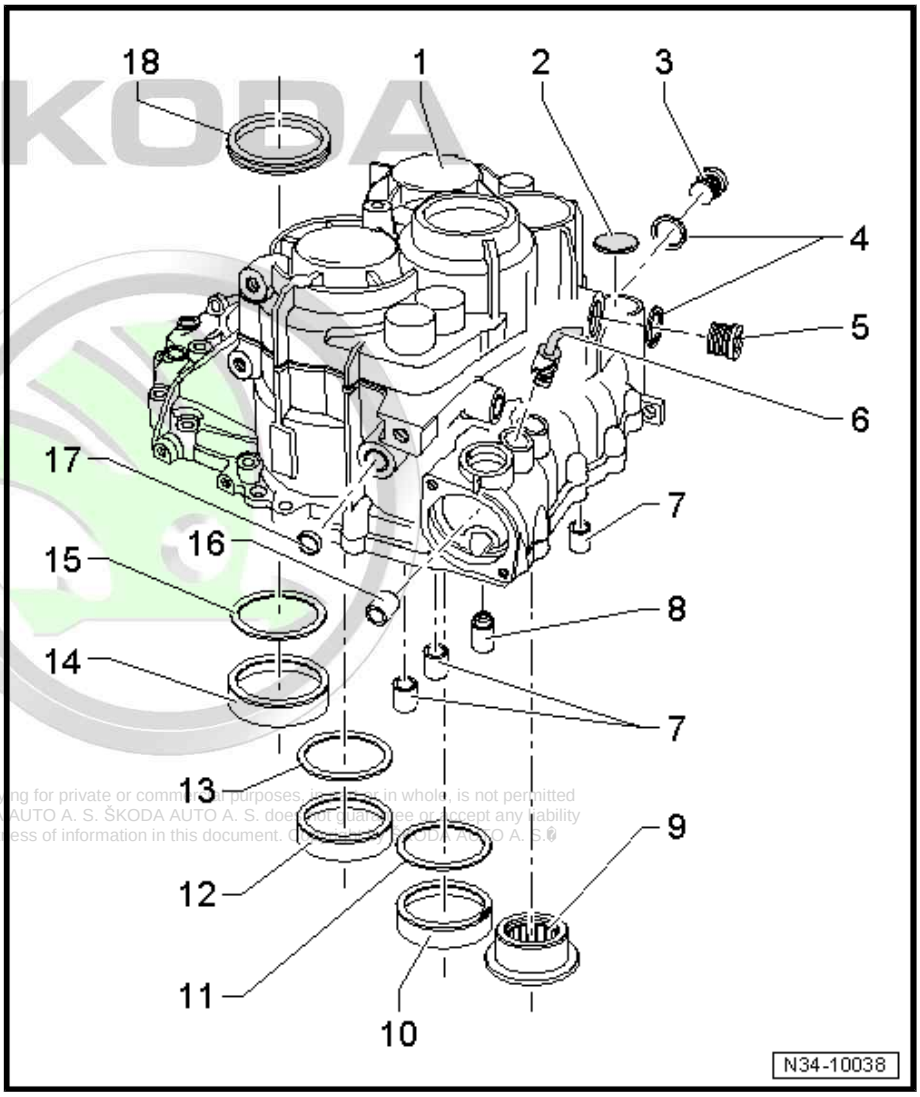
– Attach angle gearbox to gearbox and tighten connecting screws crosswise to tightening torque ⇒ Item 17 (page 122) .

– Tighten the screw of the flange shaft -arrow 1- with socket insert -T10107A- to tightening torque ⇒ Item 16 (page 122) .



# 7 Repairing gearbox housing

## 7.1 Summary of components - Gearbox housing




**1 - Gearbox housing**

- ❑ when replacing: Set the output shafts and the differential gear ⇒ page 210
- ❑ Modifications in the area of the support for the grooved ball bearing/ drive shaft ⇒ page 165
- ❑ assign components via ⇒ Electronic Catalogue of Original Parts

**2 - Screw cap**

- ❑ removing ⇒ page 147
- ❑ inserting ⇒ page 147

**3 - Oil drain plug**

- ❑ pay attention to different version ⇒ page 118
- ❑ Internal serration screw, 45 Nm
- ❑ Allan screw, 30 Nm

**4 - Sealing ring**

- ❑ if present, always replace ⇒ Electronic Catalogue of Original Parts

**5 - Oil filler plug**

- ❑ pay attention to different versions ⇒ page 118
- ❑ Internal serration screw, 45 Nm
- ❑ Allan screw, 30 Nm

**6 - Locking angle**

- ❑ for setting the gearshift mechanism ⇒ page 77
- ❑ can be replaced without disassembling gearbox
- ❑ removing ⇒ page 147
- ❑ Fitting position ⇒ page 148
- ❑ inserting ⇒ page 148

**7 - Bushing**

- ❑ for selector rods
- ❑ removing ⇒ page 148
- ❑ inserting ⇒ page 148

**8 - Serrated sleeve**

- ❑ press out with gearbox disassembled ⇒ page 149
- ❑ drive out without disassembling gearbox ⇒ page 149
- ❑ Difference between serrated sleeves ⇒ page 149
- ❑ Drive in serrated sleeve with shoulder ⇒ page 149

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- ❑ Drive in serrated sleeve without shoulder ⇒ page 149

**9 - Needle bushing**

- ❑ for reverse shaft
- ❑ replace after each disassembly ⇒ electronic catalogue of original parts
- ❑ removing ⇒ page 150
- ❑ installing ⇒ page 150

**10 - Outer ring/tapered-roller bearing**

- ❑ for output shaft 5th/6th and reverse gear
- ❑ removing and installing ⇒ page 186
- ❑ when replacing: Set output shaft 5th/6th and reverse gear ⇒ page 193

**11 - Adjusting washer**

- ❑ for output shaft 5th/6th and reverse gear
- ❑ Setting overview ⇒ page 210

**12 - Outer ring/tapered-roller bearing**

- ❑ for output shaft gears 1 through 4
- ❑ removing and installing ⇒ page 171
- ❑ when replacing: Set output shaft gears 1 through 4 ⇒ page 182

**13 - Adjusting washer**

- ❑ for output shaft gears 1 through 4
- ❑ Setting overview ⇒ page 210

**14 - Outer ring/tapered-roller bearing**

- ❑ for differential gear
- ❑ removing and installing ⇒ page 211
- ❑ when replacing: Set the differential gear ⇒ page 220

**15 - Adjusting washer**

- ❑ for differential gear
- ❑ Setting overview ⇒ page 210

**16 - Bushing**

- ❑ for gearshift shaft
- ❑ removing ⇒ page 150
- ❑ inserting ⇒ page 150

**17 - Plug**

- ❑ drive out with drift
- ❑ inserting ⇒ page 151

**18 - Sealing ring**

- ❑ replace ⇒ page 197

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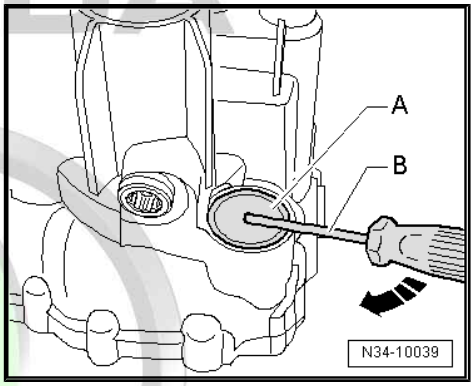
## 7.2 Repairing gearbox housing

**Special tools and workshop equipment required**




- Drive bushing -MP3-402 (VW 244B)-
- Pressure plate -MP3-406 (VW 401)-
- Pressure plate -MP3-407 (VW 402)-
- Multi-purpose tool -MP3-419 (VW 771)-
- Thrust piece -MP3-420 (3124)-
- Pressure spindle -MP3-423 (VW 407)-
- Guide piece -MP3-454 (VW 439)-
- Pipe section -MP3-4012 (VW 416B)-
- Retaining plate -T30027 (VW 801)-
- Guide bolt -T30074 (10 - 15)-
- Mandrel -T30083 (3264)-
- Assembly device -T30100 (3290)-
- Drift -T10168-
- Drift -T10169- or Drift -T10362- ⇒ page 149
- Thrust piece -T10203-
- Interior extractor e.g. -Kukko 21/2-
- Interior extractor e.g. -Kukko 21/4-
- Countersupport e.g. -Kukko 22/2 -

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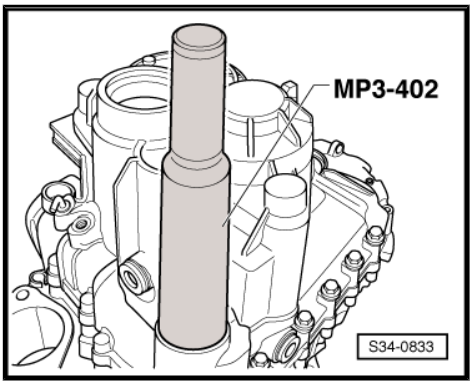
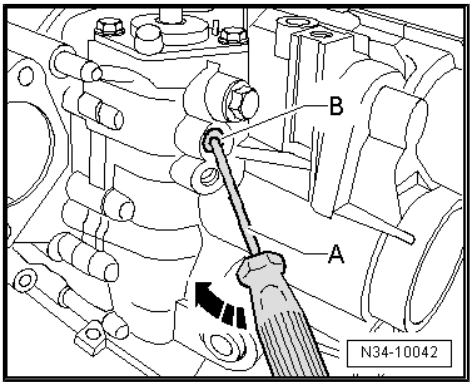
**Removing cap -A-**

– Push the rubber through the middle of the cap using a screwdriver -B- and lever out the cap -direction of arrow-.

**Drive in cap up to the stop**




**Removing locking angle for gearshift shaft**

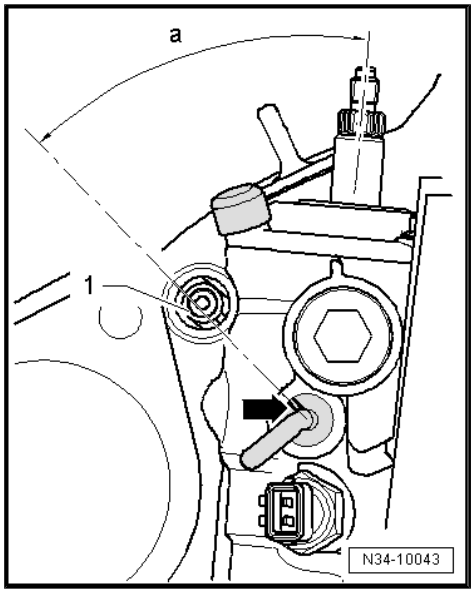



– Remove angle in the released position.
– Insert a screwdriver -A- in the hole of the locking angle -B-.
– Lever out inner part of locking angle in -the direction of the arrow-.

**Fitting position of locking angle**

– The marking on the locking angle -arrow- must point to the connection of the slave cylinder -1-.

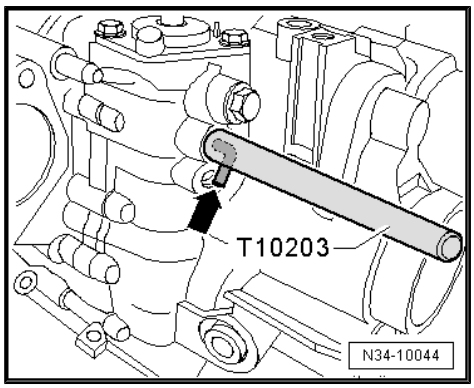
The dimension -a- must be approx. 45°.




**Drive in locking angle -arrow- for gearshift shaft up to the stop of the tool**

**Note**

*Locking angle must be released during drive-in procedure.*



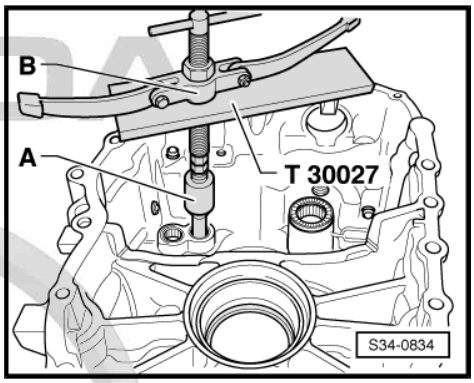

**Remove bushing for gear shift rod**

A - Interior extractor 14.5...18.5 mm , e.g. -Kukko 21/2 -

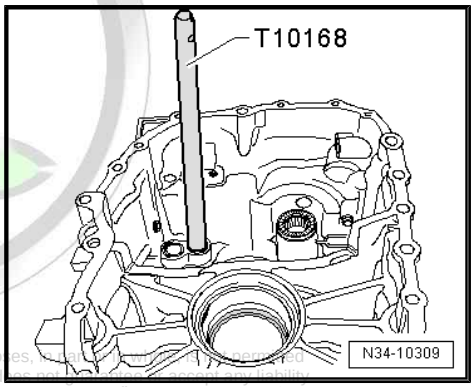
B - Countersupport , e.g. -Kukko 22/2-

**Note**

*After removing the bushing check for damage, if necessary replace.*




**Drive in the bushing for the shift rod up to the stop of the tool**

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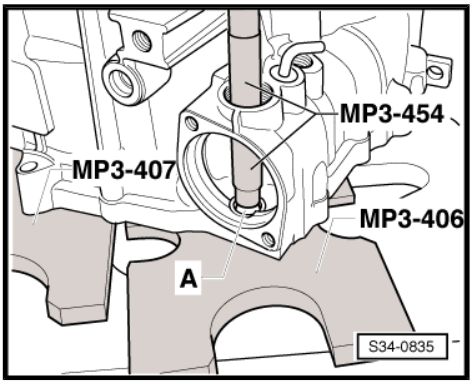
### Press serrated sleeve -A- out of gearbox housing

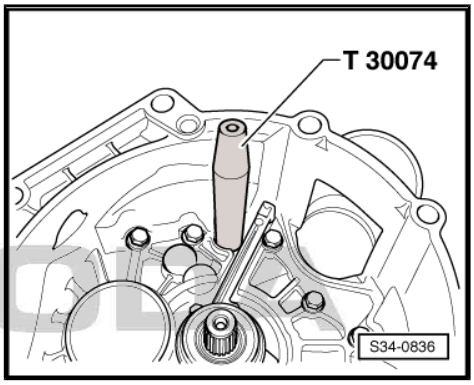
– Position the gearbox housing on the pressure plates -MP3-406- and -MP3-407- in such a way that the dowel sleeves in the gearbox housing are not damaged.




### Drive out serrated sleeve without disassembling gearbox with guide bolts -T30074-

– First remove locking screw and gearshift shaft.

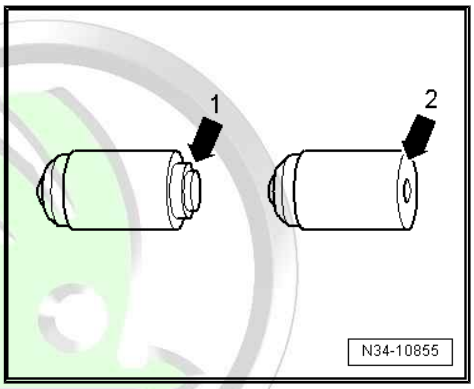
– Turn the gearbox in such a way that the serrated sleeve does not fall into the gearbox.




### Difference between serrated sleeves

A serrated sleeve can be fitted with shoulder -arrow 1- ⇒ page 149 and without shoulder -arrow 2- ⇒ page 149 .

Assign components via the ⇒ Electronic catalogue of original parts .

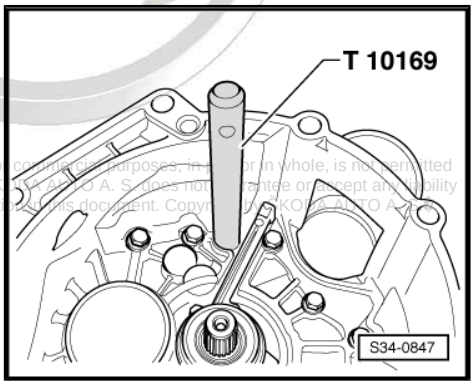



### Drive in serrated sleeve up to the stop of the tool

A - Drive in serrated sleeve with shoulder, drift -T10169- .

B - Drive in serrated sleeve without shoulder, drift -T10362- .

• Gearbox housing screwed to clutch housing.

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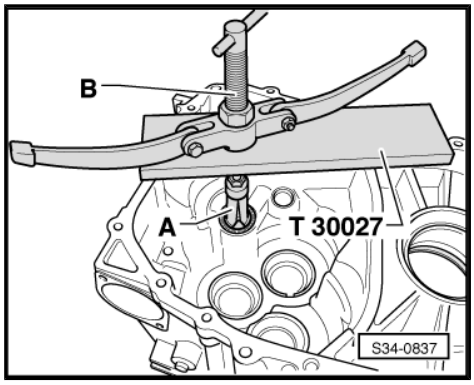
**Pull needle bushing for reverse shaft out of the gearbox housing**

A - Interior extractor 23.5...30 mm , e.g. -Kukko 21/4-

B - Countersupport , e.g. -Kukko 22/2-



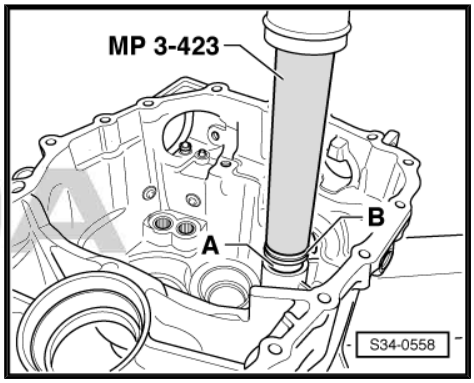

**Note**

*The needle bushing is damaged when removed and must be replaced.*

**Pressing in needle bushing -A- in the gearbox housing**

– During press-in procedure, position the thrust washer -A- of the reverse shaft onto the needle bushing.

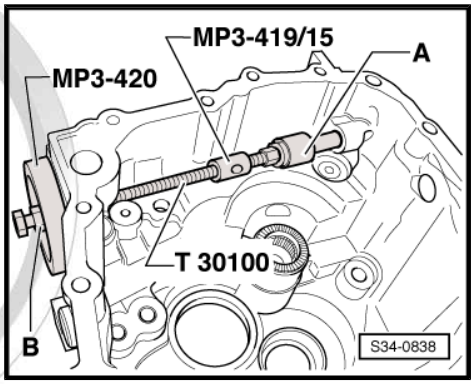
– Support the gearbox housing with a pipe section -MP3-4012- directly below the bearing support.



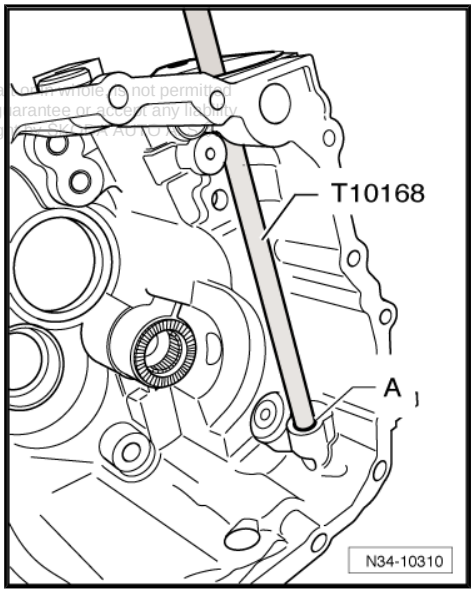

**Remove bushing for gearshift shaft**

– Hold spindle of assembly device -T30100- and turn nut -B-.

A - Interior extractor 14.5...18.5 mm , e.g. -Kukko 21/2-




**Drive in the bushing -A- for the gearshift shaft up to the stop of the tool.**

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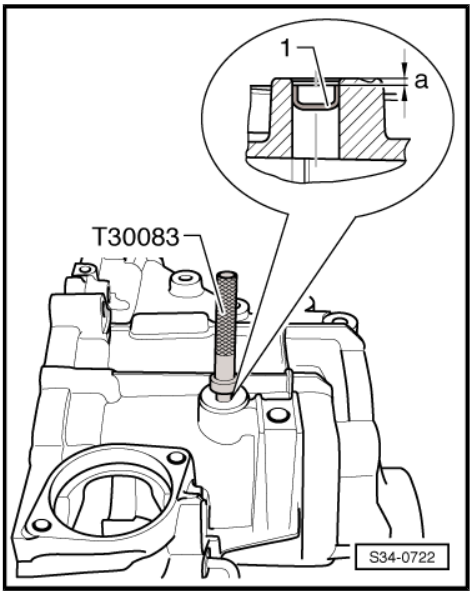
### Driving in plug

– Drive in plug -1- with the mandrel -T30083- to the dimension -a- = approx. 3 mm below the upper edge of the housing.

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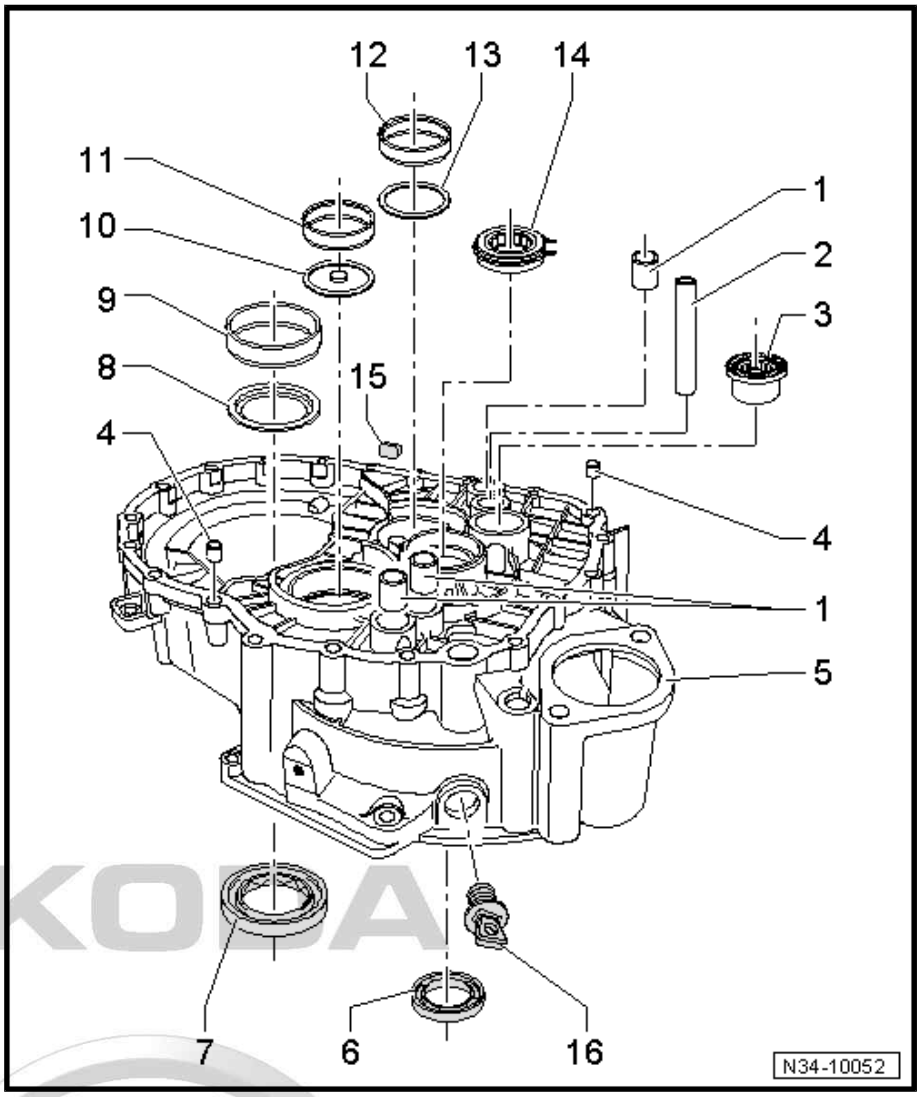
# 8 Repairing clutch housing

## 8.1 Summary of components - Front-wheel-drive




**1 - Bushing**

- ❑ for selector rods
- ❑ removing ⇒ page 155
- ❑ inserting ⇒ page 156

**2 - Shaft for reverse gear shift fork**

- ❑ Shaft cannot be removed with workshop tools
- ❑ Press shaft into the clutch housing ⇒ page 157
- ❑ Modification as of 06.09: on gearboxes where the reverse gear shift fork is positioned on the 5th/6th gear shift rod, the shaft is not fitted

**3 - Needle bushing**

- ❑ for reverse shaft
- ❑ replace after each disassembly ⇒ electronic catalogue of original parts
- ❑ removing ⇒ page 156
- ❑ installing ⇒ page 156

**4 - Fitting sleeve**

- ❑ 2 pieces

**5 - Clutch housing**

- ❑ when replacing: Set the output shafts and the differential gear ⇒ page 210
- ❑ Modification as of 06.09: on gearboxes where the reverse gear shift fork is positioned on the 5th/6th gear shift rod, the shaft for reverse gear shift fork is not fitted
- ❑ assign according to ⇒ Electronic Catalogue of Original Parts

**6 - Gasket ring for drive shaft**

- ❑ removing ⇒ page 156
- ❑ inserting ⇒ page 157

**7 - Sealing ring**

- ❑ for rigid shaft, gearbox up to production date 10.04
- ❑ for flange shaft, gearbox as of production date 11.04
- ❑ replace ⇒ page 197

**8 - Washer**

- ❑ for differential gear
- ❑ Fitting position: the shoulder on the inside diameter points towards the gasket ring Pos. 7

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**9 - Outer ring/tapered-roller bearing**

- ❑ for the differential gear
- ❑ removing and installing ⇒ page 211
- ❑ when replacing: Set the differential gear ⇒ page 220

**10 - Oil deflecting washer**

- ❑ Fitting position: The shoulder on the hole points to the output shaft

**11 - Outer ring/tapered-roller bearing**

- ❑ for output shaft gears 1 through 4
- ❑ removing and installing ⇒ page 171
- ❑ when replacing: Set output shaft gears 1 through 4 ⇒ page 182

**12 - Outer ring/tapered-roller bearing**

- ❑ for output shaft 5th/6th and reverse gear
- ❑ removing and installing ⇒ page 186
- ❑ when replacing: Set output shaft 5th/6th and reverse gear ⇒ page 193

**13 - Washer**

- ❑ for output shaft 5th/6th and reverse gear
- ❑ always 0.65 mm thick

**14 - Cylindrical-roller bearing**

- ❑ for drive shaft
- ❑ removing and installing ⇒ page 165

**15 - Magnet**

- ❑ is held in position by the separator surface of the housing

**16 - Cap**

- ❑ not fitted to all clutch housings

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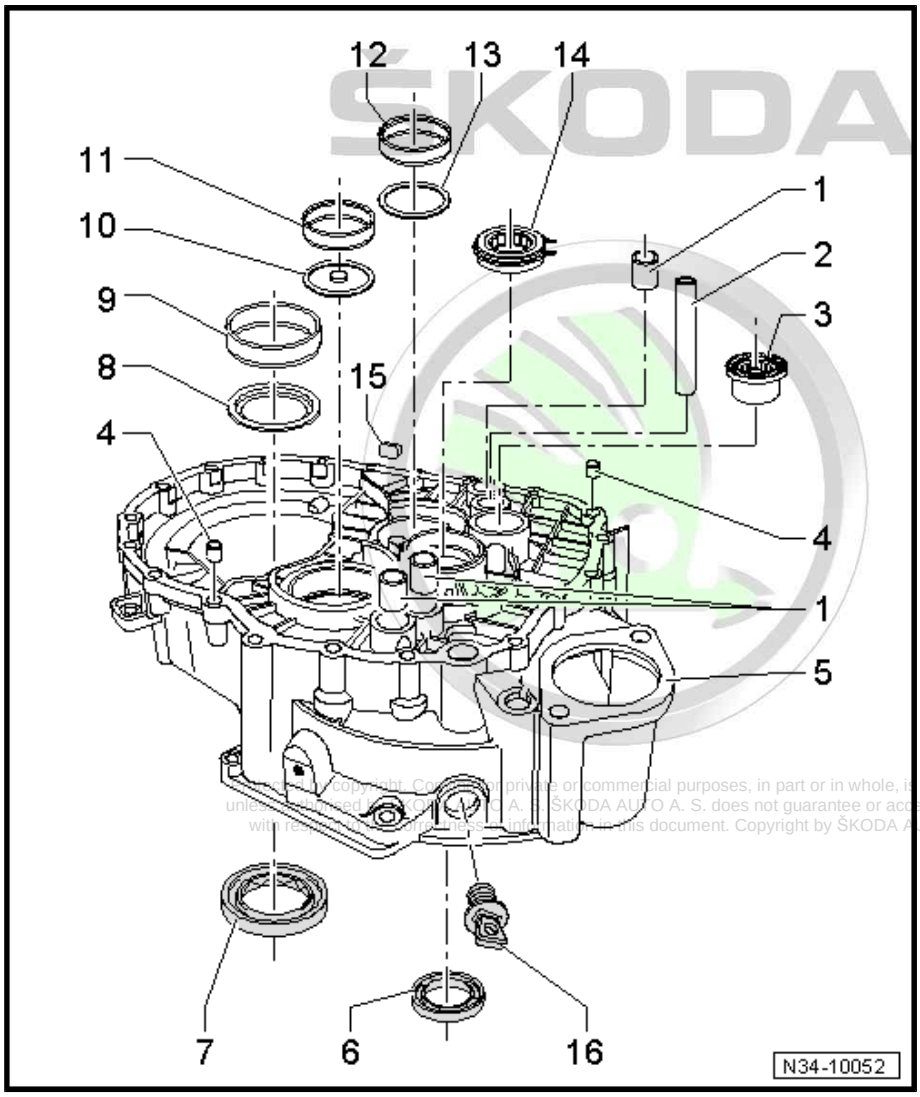
## 8.2 Summary of components - Four-wheel drive




**1 - Bushing**

- ❑ for selector rods
- ❑ removing ⇒ page 155
- ❑ inserting ⇒ page 156

**2 - Shaft for reverse gear shift fork**

- ❑ Shaft cannot be removed with workshop tools
- ❑ When using a new clutch housing a new shaft must be pressed in ⇒ page 157
- ❑ Modification as of 06.09: on gearboxes where the reverse gear shift fork is positioned on the 5th/6th gear shift rod, the shaft is not fitted

**3 - Needle bushing**

- ❑ for reverse shaft
- ❑ replace after each disassembly ⇒ electronic catalogue of original parts
- ❑ removing ⇒ page 156
- ❑ installing ⇒ page 156

**4 - Fitting sleeve**

- ❑ 2 pieces

**5 - Clutch housing**

- ❑ when replacing: Set the output shafts and the differential gear ⇒ page 210
- ❑ Modification as of 06.09: on gearboxes where the reverse gear shift fork is positioned on the 5th/6th gear shift rod, the shaft for reverse gear shift fork is not fitted
- ❑ assign according to ⇒ Electronic Catalogue of Original Parts

**6 - Gasket ring for drive shaft**

- ❑ removing ⇒ page 156
- ❑ inserting ⇒ page 157

**7 - Sealing ring**

- ❑ between manual gearbox and angle gearbox
- ❑ replace with installed gearbox ⇒ page 203
- ❑ pull out using ejection lever -MP3-418- or extraction hook -T20143-
- ❑ on disassembled gearbox it can be driven in with pressure plate -T40007 - up to the stop

**8 - Washer**

- ❑ for differential gear
- ❑ Fitting position: the shoulder on the inside diameter points towards the gasket ring Pos. 7

**9 - Outer ring/tapered-roller bearing**

- ❑ for the differential gear
- ❑ removing and installing ⇒ page 211

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- ❑ when replacing: Set the differential gear ⇒ page 220

**10 - Oil deflecting washer**

- ❑ Fitting position: The shoulder on the hole points to the output shaft

**11 - Outer ring/tapered-roller bearing**

- ❑ for output shaft gears 1 through 4
- ❑ removing and installing ⇒ page 171
- ❑ when replacing: Set output shaft gears 1 through 4 ⇒ page 182

**12 - Outer ring/tapered-roller bearing**

- ❑ for output shaft 5th/6th and reverse gear
- ❑ removing and installing ⇒ page 186
- ❑ when replacing: Set output shaft 5th/6th and reverse gear ⇒ page 193

**13 - Washer**

- ❑ for output shaft 5th/6th and reverse gear
- ❑ always 0.65 mm thick

**14 - Cylindrical-roller bearing**

- ❑ for drive shaft
- ❑ removing and installing ⇒ page 165

**15 - Magnet**

- ❑ is held in position by the separator surface of the housing

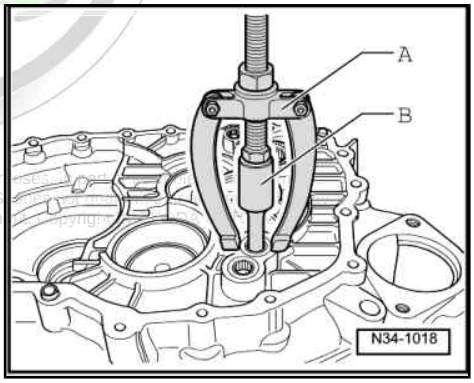
**16 - Cap**

- ❑ not fitted to all clutch housings

## 8.3 Repairing clutch housing

**Special tools and workshop equipment required**

- ♦ Pressure spindle -MP3-423 (VW 407)-
- ♦ Drift -T10168-
- ♦ Thrust piece -T40008-
- ♦ Interior extractor e.g. -Kukko 21/2-
- ♦ Interior extractor e.g. -Kukko 21/4-
- ♦ Countersupport e.g. -Kukko 22/1-
- ♦ Countersupport e.g. -Kukko 22/2-




**Remove bushing for gear shift rod**

A - Countersupport , e.g. -Kukko 22/1-

B - Interior extractor 14.5...18.5 mm , e.g. -Kukko 21/2-

**Note**

*After removing the bushing check for damage, if necessary replace.*

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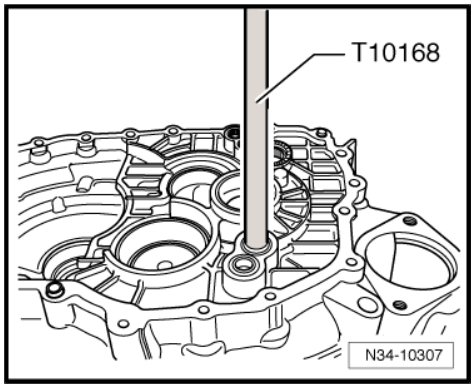
**Drive in the bushing for the shift rod up to the stop of the tool**



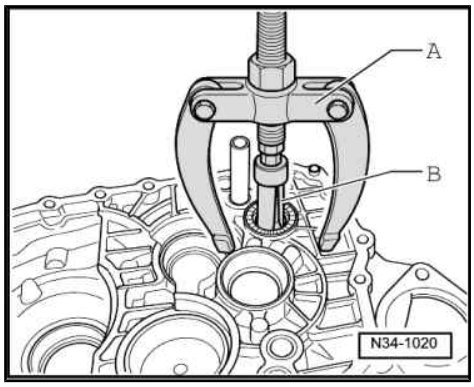

**Removing needle bushing from clutch housing**

A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 23.5...30 mm , e.g. -Kukko 21/4-

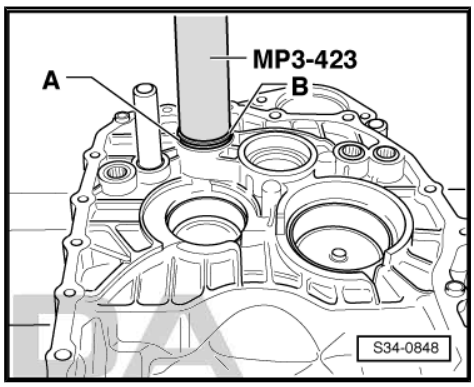
**Note**

*The needle bushing is damaged when removed and must be replaced.*




**Pressing in needle bushing -A- in the clutch housing**

– During press-in procedure, position the thrust washer -B- of the reverse shaft onto the needle bushing -A-.

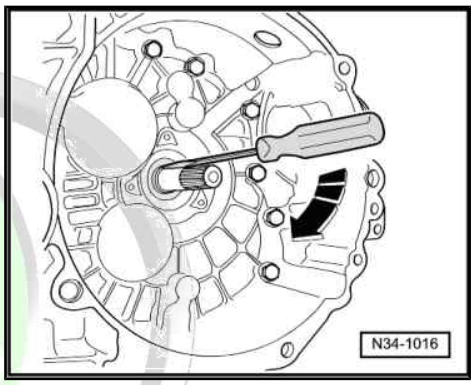



**Removing gasket ring for drive shaft**

– Carefully lever out gasket ring with screwdriver.

**Note**

- *Do not damage contact surface for shaft seal on the drive shaft.*
- *The gasket ring can also be removed with the extraction hook -T20143/1- .*

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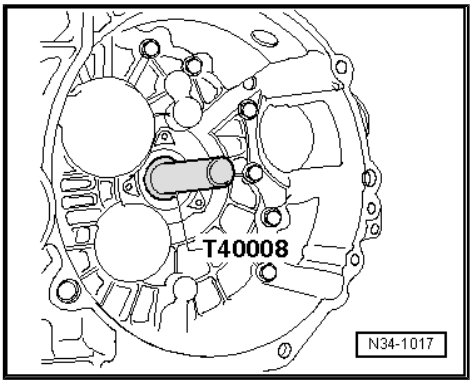
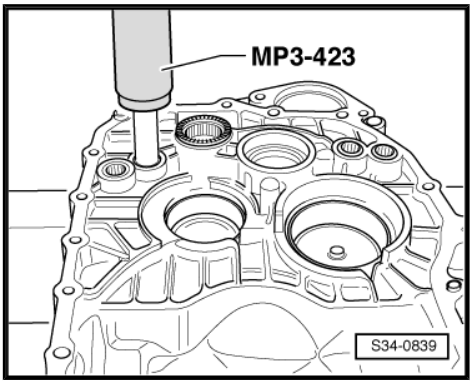
Insert the gasket ring for the drive shaft until flush




Press shaft for reverse gear shift fork into the clutch housing

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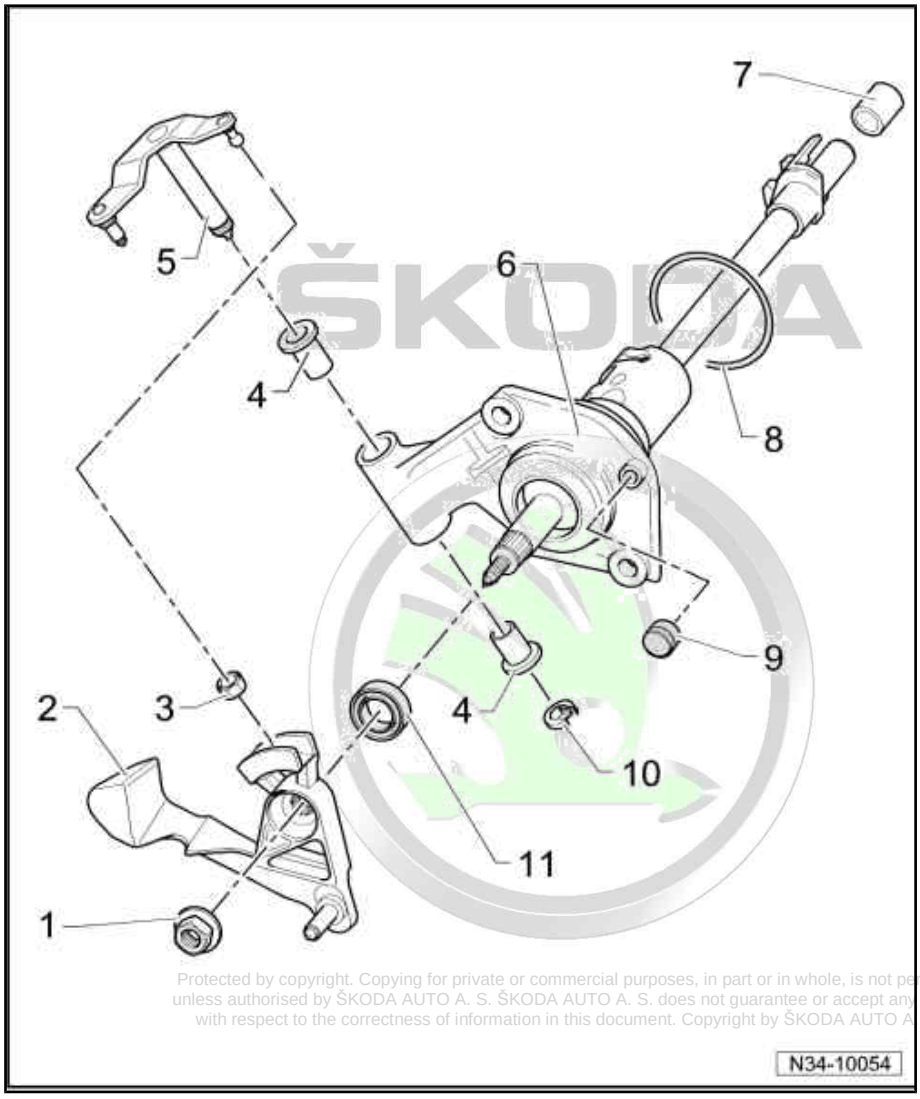
# 9 Repairing gearshift unit

**Special tools and workshop equipment required**

- Pipe section -MP3-479 (VW 423)-
- Extraction hook -T20143/1-

**Note**

*Coat bearings and friction surfaces with grease - G 000 450 02- .*




**1 - 23 Nm**
- ❑ self-locking
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**2 - Gearshift lever**
- ❑ insert in such a way that the interrupted spacing of the teeth matches the gearshift shaft
- ❑ may be replaced with the gearshift mechanism mounted
- ❑ Fitting position ⇒ page 65
- ❑ after installing set shift mechanism ⇒ page 77

**3 - Sliding shoe**
- ❑ clip into relay lever Pos. 5

**4 - Bushing**
- ❑ is not required for plastic relay lever

**5 - Reversing lever**
- ❑ out of plastic or metal
- ❑ Metal relay lever is located in the bushings Pos. 4 and secured with a lock washer Pos. 10
- ❑ as of 03.07 plastic relay lever ⇒ page 70
- ❑ Fitting position ⇒ page 65
- ❑ after installing set shift mechanism ⇒ page 77

**6 - Gearshift shaft**
- ❑ with cover
- ❑ Difference between the gearshift shafts in the area of the lower shift finger -arrow- ⇒ page 159
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ can be installed or removed with the gearbox mounted

**7 - Bushing**
- ❑ for gearshift shaft
- ❑ removing and installing ⇒ page 145

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**8 - O-ring**

- ❑ insert into the round slot of the gearshift cover
- ❑ insert with gear oil
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**9 - Cap**

- ❑ for gearbox bleeder

**10 - Lock washer**

- ❑ for bell crank lever
- ❑ removing ⇒ page 159
- ❑ is not required for plastic relay lever

**11 - Sealing ring**

- ❑ remove with screwdriver or with extraction hook -T20143/1- ⇒ page 159
- ❑ installing ⇒ page 160

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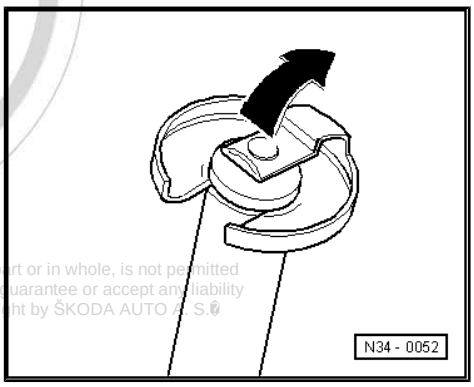
### Remove lock washer for bell crank lever

– Lift retaining clip in the -direction of the arrow-.



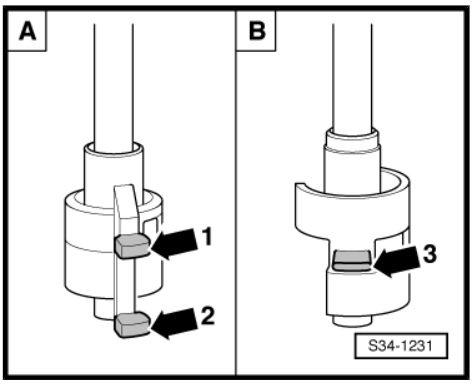

### Difference between the gearshift shafts

A - previous gearshift shaft (up to 05.09) with 2 shift fingers -arrow 1- and -arrow 2- in the lower area of the gearshift shaft

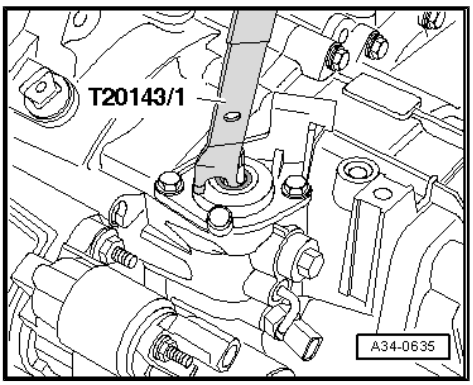
- Fit this gearshift shaft on gearboxes where the reverse gear shift fork is positioned on the shaft for reverse gear shift fork in the clutch housing.

B - modified gearshift shaft (as of 06.09) with 1 shift finger -arrow 3- in the lower area of the gearshift shaft

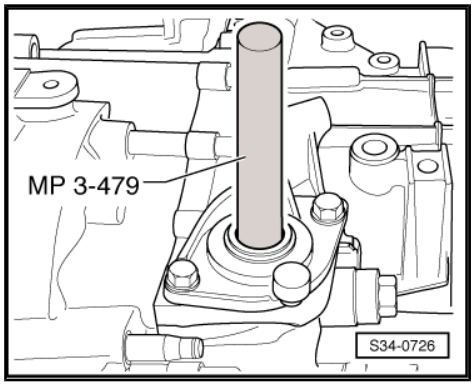
- Fit this gearshift shaft on gearboxes where the reverse gear shift fork is positioned on the 5th/6th gear shift rod.




### Remove gasket ring with ejection hook -T20143/1-



**Insert gasket ring up to the stop with pipe section -MP3-479 (VW 423)-**

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# 10 Disassembling and assembling the gearshift forks

## 10.1 Disassembling and assembling gearshift forks up to 05.09

**Special tools and workshop equipment required**

- Pressure plate -MP3-407 (VW 402)-
- Thrust piece -MP3-453 (VW 431) -
- Thrust piece with spacer sleeve -MP3-458 (VW 472)-
- Pressure spindle -MP6-405 (VW 411)-
- Interior extractor e.g. -Kukko 21/3-
- Countersupport e.g. -Kukko 22/1-

**Note**

- *The reverse gear shift fork Pos. 5 is positioned on the shaft for reverse gear shift fork in the clutch housing.*
- *Fitting position of gearshift forks and gear shift rods in the gearbox* *⇒ page 162* *.*

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**1 - Rubber insulation**

- ❑ can be pulled out of the gear shift rod and inserted by hand

**2 - Gear shift rod with shift fork for 1st and 2nd gear**

**3 - Gear shift rod with shift fork for 3rd and 4th gear**

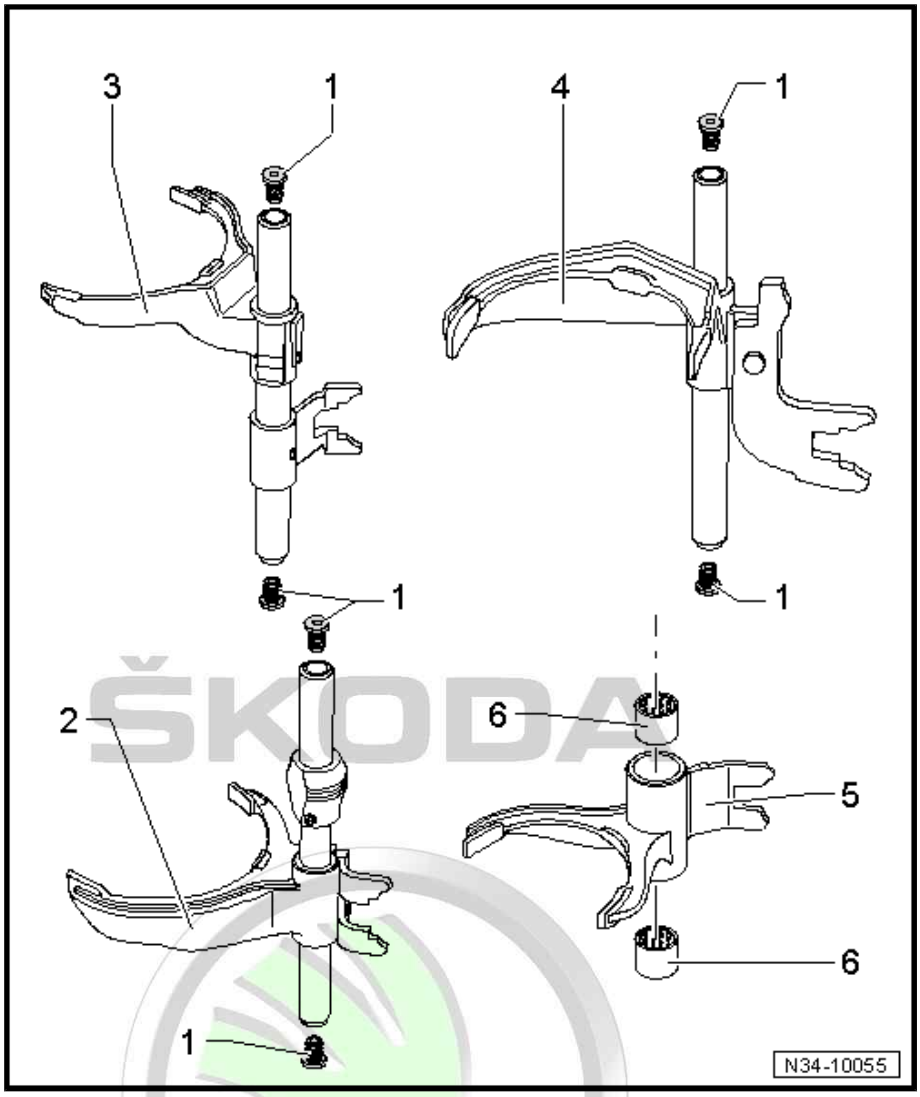
**4 - Gear shift rod with shift fork for 5th and 6th gear**

**5 - Gearshift fork reverse gear**

- ❑ the ball sleeve is no longer fitted as of production date 03.06 ⇒ page 163
- ❑ Time of application is flexible
- ❑ the reverse gear shift fork is adapted
- ❑ Difference between the reverse gear shift forks ⇒ page 163

**6 - Ball sleeve**

- ❑ removing ⇒ page 163
- ❑ installing ⇒ page 163
- ❑ the ball sleeve is no longer fitted as of production date 03.06
- ❑ Time of application is flexible




**Fitting position of gearshift forks and gear shift rods in the gearbox**

1 - Drive shaft

2 - Output shaft gears 1 through 4

3 - Output shaft 5th/6th gear/reverse gear

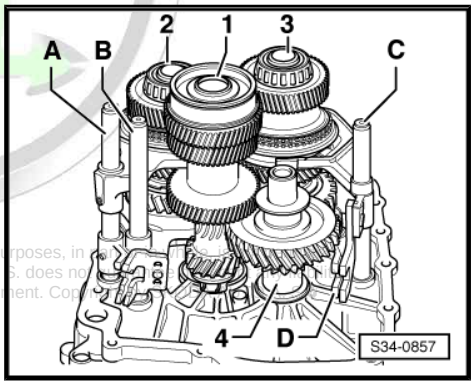
4 - Reverse shaft

A - Gear shift rod with 3rd and 4th gear shift fork

B - Gear shift rod with 1st and 2nd gear shift fork

C - Gear shift rod with 5th and 6th gear shift fork

D - Gearshift fork reverse gear

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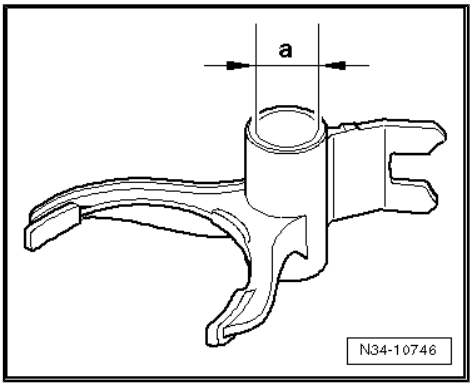
**Difference between the reverse gear shift forks**

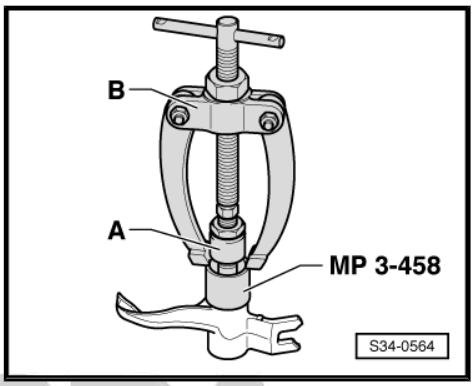
| Dimension “a” mm | Production date |
|---|---|
| 24 | up to 05 03 6 |
| 18 | as of 06 03 6 |



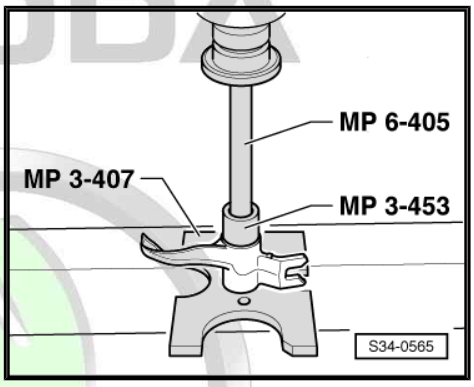

**Up to production date 03.06 - remove ball sleeve for reverse gear shift fork**

A - Interior extractor 18...23 mm , e.g. -Kukko 21/3-

B - Countersupport , e.g. -Kukko 22/1-




**Up to production date 03.06 - press in ball sleeve for reverse gear shift fork**




## 10.2 Disassembling and assembling the gearshift forks as of 06.09

**Note**

- *The reverse gear shift fork Pos. 5 is positioned on the 5th/6th gear shift rod.*
- *Fitting position of gearshift forks and gear shift rods in the gearbox* ⇒ page 164 .

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**1 - Rubber insulation**

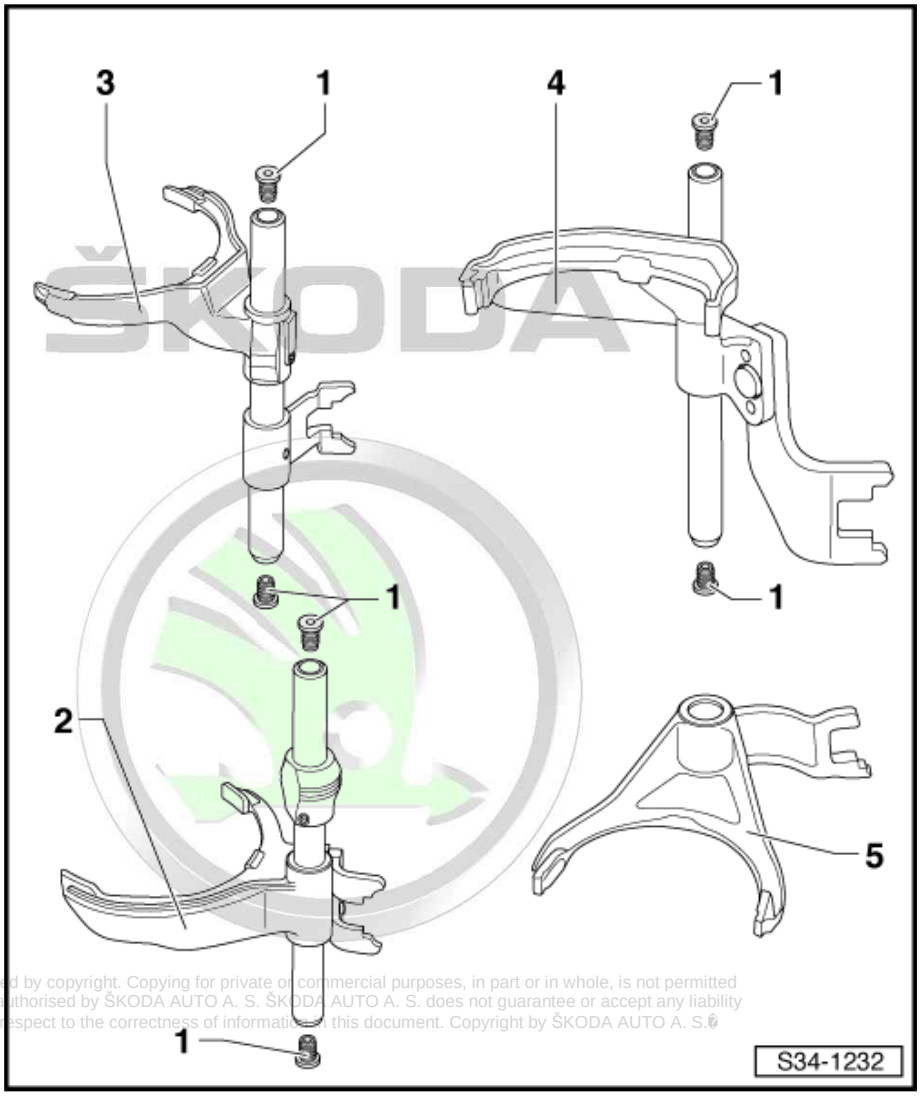
- ❑ can be pulled out of the gear shift rod and inserted by hand

**2 - Gear shift rod with shift fork for 1st and 2nd gear**

**3 - Gear shift rod with shift fork for 3rd and 4th gear**

**4 - Gear shift rod with shift fork for 5th and 6th gear**

**5 - Gearshift fork reverse gear**

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**Fitting position of gearshift forks and gear shift rods in the gearbox**

1 - Drive shaft

2 - Output shaft gears 1 through 4

3 - Output shaft 5th/6th gear/reverse gear

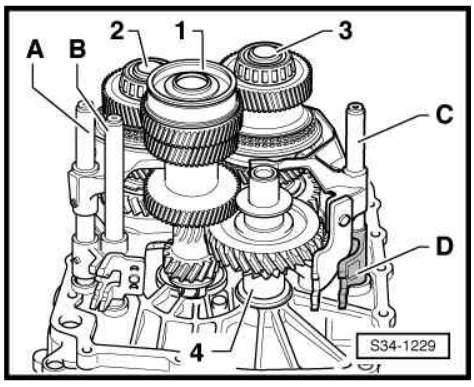
4 - Reverse shaft

A - Gear shift rod with 3rd and 4th gear shift fork

B - Gear shift rod with 1st and 2nd gear shift fork

C - Gear shift rod with 5th and 6th gear shift fork

D - Gearshift fork reverse gear



# 35 – Wheels, shafts

## 1 Drive shaft

### 1.1 Disassembling and assembling the drive shaft

**Special tools and workshop equipment required**

- Pressure plate -MP3-406 (VW 401)-
- Pressure plate -MP3-407 (VW 402)-
- Pressure spindle -MP3-408 (VW 412)-
- Thrust piece -MP3-453 (VW431)-
- Thrust piece - MP3-4014 (VW 432)-
- Thrust piece -MP3-411 (VW 454) -
- Drift pin -MP3-426 (30-505)-
- Thrust plate -MP3-467 (40-105)-
- Pipe section -T30041 (2040)-
- Interior extractor e.g. -Kukko 21/5-
- Separating device , e.g. -Kukko 17/1 -
- Separating device , e.g. -Kukko 17/2 -
- Extractor , e.g. -Kukko 18/1 -
- Countersupport e.g. -Kukko 22/2 -

**Note**

*Insert all bearings on the drive shaft with gear oil.*

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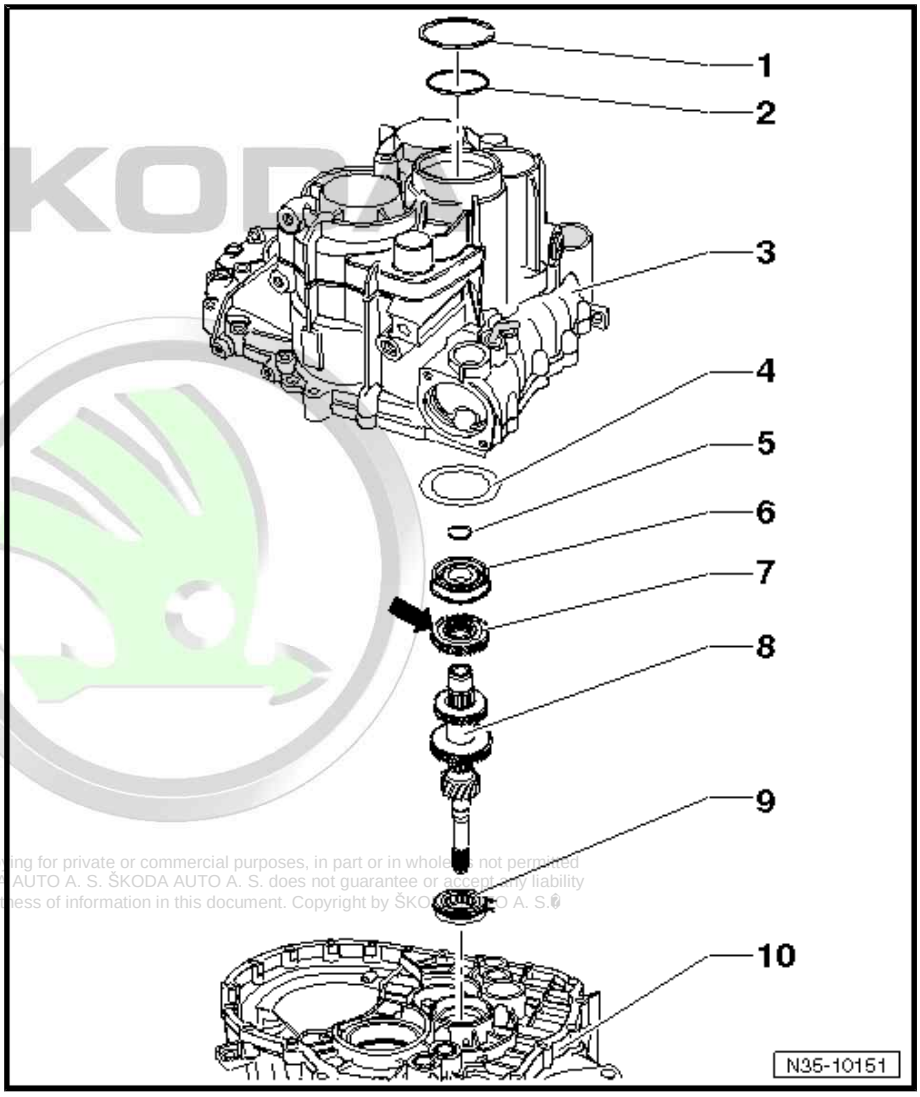


**1 - Circlip**

- ❑ removing and installing ⇒ page 123

**2 - Washer**

- ❑ Outer diameter = 78.6 mm
- ❑ can only be used on modified gearbox housings (as of production date 04.06 up to 01.08) ⇒ page 169
- ❑ assign components via ⇒ Electronic Catalogue of Original Parts

**3 - Gearbox housing**

- ❑ adapted for the washers Pos. 2 and Pos. 4 as of production date 04 06 up to production date 01.08 in the area of the bearing pedestal for the grooved ball bearing Pos. 6 ⇒ page 169
- ❑ flattened parts at the grooved ball bearing and at the bearing pedestal of the grooved ball bearing as of production date 02.08 ⇒ page 170
- ❑ assign components via ⇒ Electronic Catalogue of Original Parts

**4 - Washer**

- ❑ Outer diameter = 85 mm
- ❑ can only be used on modified gearbox housings (as of production date 04.06 up to 01.08) ⇒ page 169
- ❑ assign components via ⇒ Electronic Catalogue of Original Parts

**5 - Circlip**

- ❑ determine ⇒ page 168 when replacing the grooved ball bearing -Pos. 6- and the drive shaft -Pos. 8-

**6 - Grooved ball bearing**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ flattened parts at the grooved ball bearing and at the bearing pedestal of the grooved ball bearing as of production date 02.08 ⇒ page 170
- ❑ remove ⇒ page 167
- ❑ pressing on ⇒ page 168

**7 - 5th gear pinion**

- ❑ pressing off ⇒ page 167
- ❑ Fitting position: round groove -arrow- points to the grooved ball bearing Pos. 6
- ❑ pressing on ⇒ page 167

**8 - Drive shaft**

- ❑ with 3rd/4th gear pinon and 6th gear

**9 - Cylindrical-roller bearing**

- ❑ with circlip
- ❑ removing ⇒ page 168

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- ❑ installing ⇒ page 169
- ❑ Fitting position: the circlip in the bearing points towards the drive shaft

**10 - Clutch housing**

**Remove grooved ball bearing**

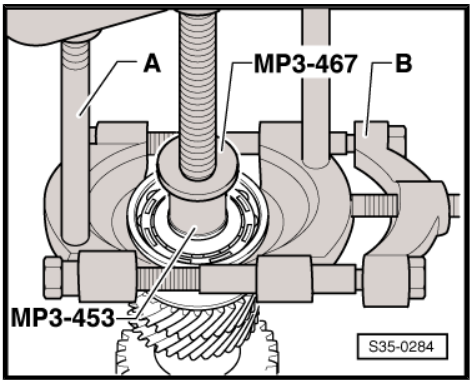
– First remove the circlip from the drive shaft.

– Before fitting the extractor position thrust piece -MP3-453- and pressure plate -MP3-467- on drive shaft.

– Position the separating device -B- in the round slot for the circlip in the bearing.

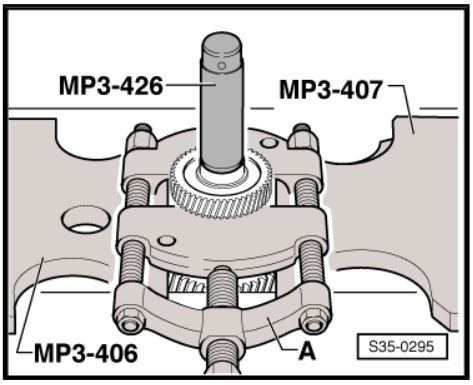
A - Extractor , e.g. -Kukko 18/1-

B - Separating device 12...75 mm , e.g. -Kukko 17/1-



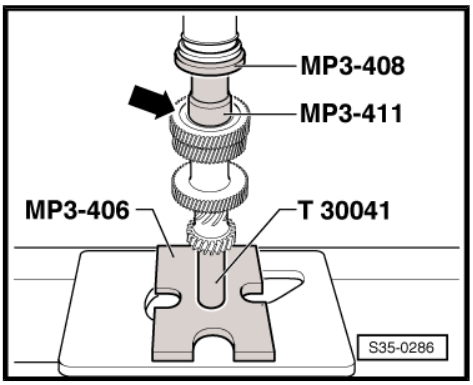

**Pressing out 5th gear pinion**

A - Separating device 22...115 mm , e.g. -Kukko 17/2-




**Pressing on 5th gear pinion**

The groove -arrow- on the gearwheel must point upwards.

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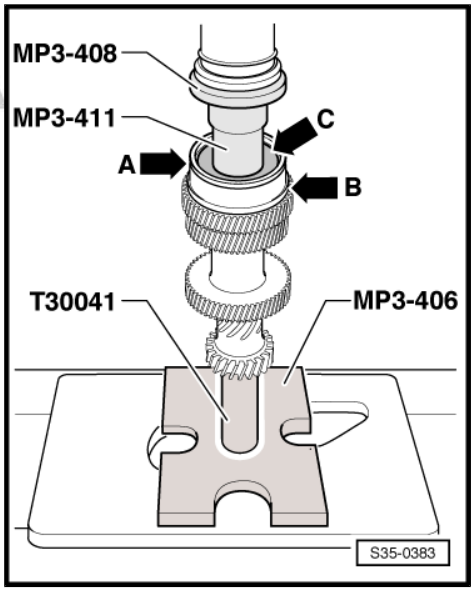
### Press on grooved ball bearing

Fitting position of grooved ball bearing:

The slot for the circlip points upwards -arrow A- and the shoulder -arrow B- must point towards the 5th gear pinion.

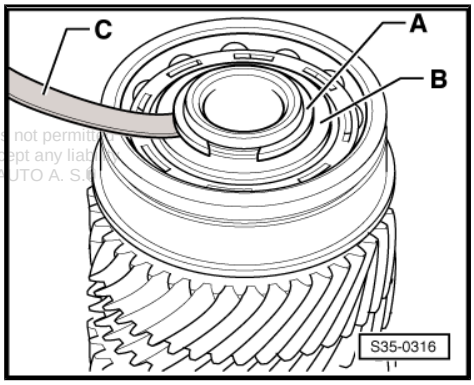



**Note**

*Position the thrust piece -VW 454- in such a way that the seal -arrow C- of the bearing is not damaged.*

– Determine the circlip ⇒ page 168 and install.

### Determining the circlip




– Insert circlip -A- with a thickness of 1.86 mm in the slot of the drive shaft and push upwards.
– Measure dimension between grooved ball bearing -B- and positioned circlip -A- using a feeler gauge -C-.
– Remove the circlip used to take the measurement.
– Determine the first circlip required according to the table.

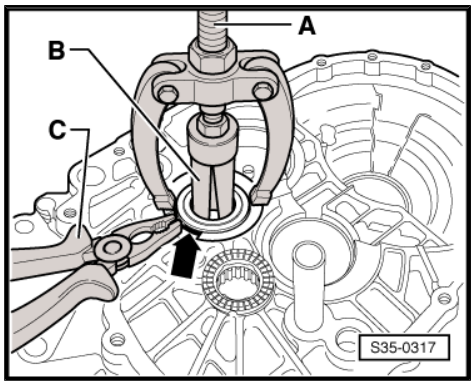
**Note**

*Assign the circlips via the ⇒ Electronic catalogue of original parts .*

The following circlips are available:

| Measured value (mm) | Circlip thickness (mm) | Axial play (mm) |
|---|---|---|
| 0,01 … 0,05 | 1,86 | 0,01 … 0,05 |
| 0,05 … 0,07 | 1,89 | 0,01 … 0,05 |
| 0,07 … 0,10 | 1,92 | 0,01 … 0,05 |
| 0,10 … 0,13 | 1,95 | 0,01 … 0,05 |
| 0,13 … 0,16 | 1,98 | 0,01 … 0,05 |

### Pull out the cylindrical-roller bearing from the clutch housing

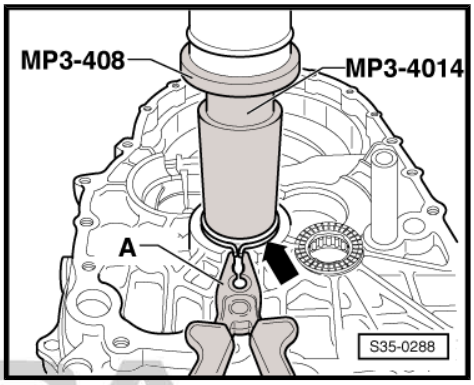



– When removing compress circlip -arrow- of the cylindrical-roller bearing with pliers -C-.

A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 30...37 mm , e.g. -Kukko 21/5-

**Press the cylindrical-roller bearing into the clutch housing**



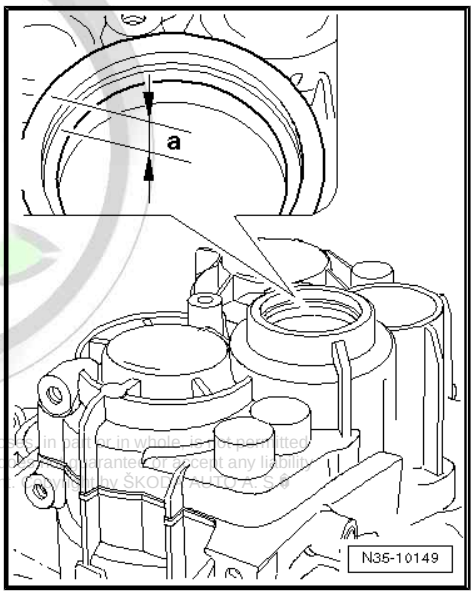

– When inserting compress circlip -arrow- of the cylindrical-roller bearing with pliers -A-.
– Remove pliers before the cylindrical-roller bearing is in fitting position. The circlip must lock into the clutch housing slot.

## 1.2 Modifications in the area of the grooved ball bearing/drive shaft

### 1.2.1 As of production date 04.06 up to production date 01.08.:

One washer above and one washer below the bearing pedestal for the grooved ball bearing ⇒ Item 6 (page 166) .

**Above the bearing pedestal:**




| Bearing pedestal | | Washer above the bearing pedestal |
|---|---|---|
| up to production date 03.06 | Size “a” 10 mm. | no |
| as of production date 04.06 up to production date 01.08 | Size “a” 10.7 mm. | yes |
| as of production date 02.08 | Below the bearing pedestal: flattened part for the grooved ball bearing | no |

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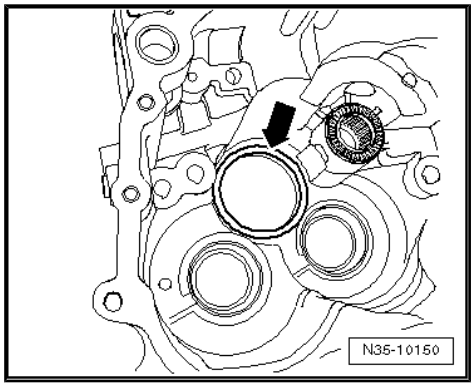
**Below the bearing pedestal -arrow-:**

**Slightly deeper as of production date 04.06 up to production date 01.08:**

So that the washer below the grooved ball bearing ⇒ Item 6 (page 166) can be installed, the bearing pedestal for the grooved ball bearing -arrow- is chamfered slightly deeper.

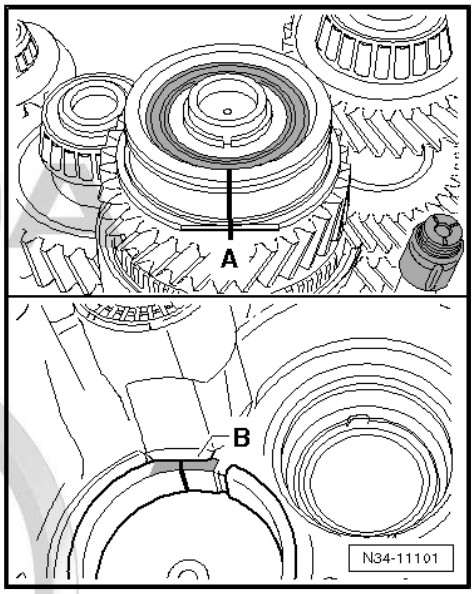



| Below the bearing pedestal | | Washer below the bearing pedestal |
|---|---|---|
| up to production date 03.06 | not chamfered. | no |
| as of production date 04.06 up to production date 01.08 | chamfered slightly deeper. | yes |
| as of production date 02.08 | Flattened part -B- for the grooved ball bearing -A- ⇒ page 170 | no |

## 1.2.2 As of production date 02.08.:

**Flattened parts on the grooved ball bearing -A- and on the bearing pedestal -B- of the gearbox housing**

- If the flattened parts are present, a washer must not be inserted above or below the grooved ball bearing.

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# 2 Output shaft gears 1 through 4

## 2.1 Disassembling and assembling output shaft gears 1 through 4

**Special tools and workshop equipment required**

- Pressure plate -MP3-406 (VW 401)-
- Pressure plate -MP3-407 (VW 402)-
- Pressure spindle -MP3-408 (VW 412)-
- Thrust piece -MP3-411 (VW 454)-
- Multi-purpose tool -MP3-419 (VW 771)-
- Pressure spindle -MP3-423 (VW 407)-
- Pressure spindle -MP3-448 (VW 408A)-
- Pipe section -MP3-450 (VW 415A)-
- Thrust piece -MP3-453 (VW 431) -
- Pressure washer -MP3-460 (VW 512)-
- Pipe section -MP3-461 (VW 519)-
- Thrust plate -MP3-467 (40-105)-
- Washer -MP6-415 (3260)-
- Bushing -T30010 (VW 540/1B)-
- Retaining plate -T30027 (VW 801)-
- Thrust piece -T30042 (2050)-
- Tapered-roller bearing extractor -V.A.G 1582-
- Gripper -V.A.G 1582/7-
- Separating device , e.g. -Kukko 17/2 -
- Extractor , e.g. -Kukko 18/2 -
- Interior extractor e.g. -Kukko 21/7-
- Interior extractor e.g. -Kukko 21/8-
- Countersupport e.g. -Kukko 22/2-

**Note**

- *If the output shaft or tapered-roller bearing is replaced, it is necessary to adjust the output shaft ⇒ page 182 .*
- *Replace both tapered-roller bearings together.*
- *A modified synchronization for 1st through 3rd gear is used in certain gearboxes ⇒ page 180 . The positions 8 to 12, 14 to 16, 18, 24, 26 to 28 and 30 are affected. Assign components via the ⇒ Electronic Catalogue of Original Parts .*

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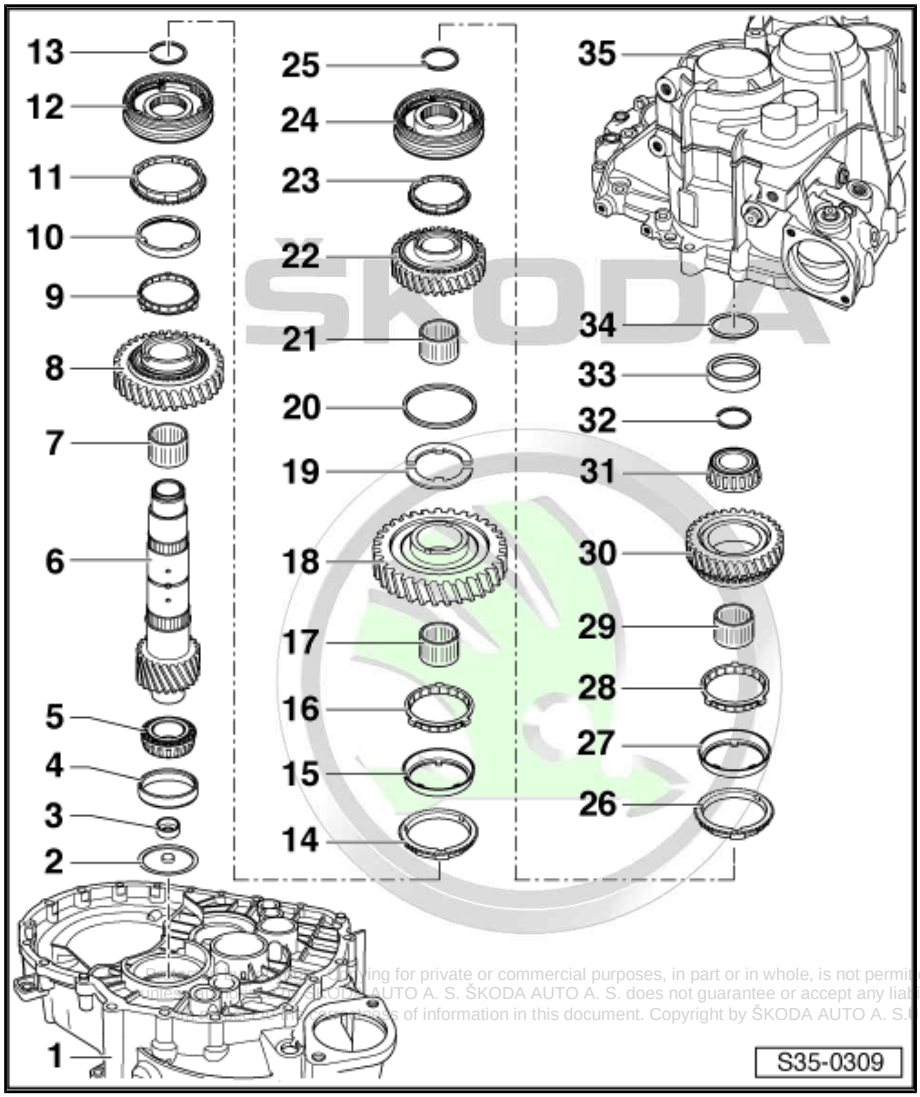


**1 - Clutch housing**

**2 - Oil deflecting washer**

**3 - Curved washer**

- ❑ removing ⇒ page 174
- ❑ installing ⇒ page 174
- ❑ replace after removal

**4 - Outer ring/tapered-roller bearing**

- ❑ removing ⇒ page 174
- ❑ installing ⇒ page 175

**5 - Inner ring/tapered-roller bearing**

- ❑ pressing off ⇒ page 176
- ❑ pressing on ⇒ page 176

**6 - Output shaft**

- ❑ 1st to 4th gear
- ❑ adjust ⇒ page 182

**7 - Needle bearing**

- ❑ for 2nd gear

**8 - 2nd gear sliding gear**

**9 - Synchronizer ring**

- ❑ (Inner ring for 2nd gear)
- ❑ check for wear ⇒ page 176
- ❑ check pegs for wear
- ❑ Fitting position ⇒ page 177

**10 - Outer ring for 2nd gear**

- ❑ position on the synchronizer ring -Pos. 9-
- ❑ replace if there are any traces of scoring or friction
- ❑ Fitting position ⇒ page 177

**11 - 2nd gear synchronizer ring**

- ❑ check for wear ⇒ page 176
- ❑ Fitting position ⇒ page 177

**12 - Sliding sleeve with 1st and 2nd gear synchronizer body**

- ❑ after removing the circlip -Pos. 13- press off with the 2nd gear sliding gear ⇒ page 175
- ❑ disassembling ⇒ page 177
- ❑ Assembling sliding sleeve/synchronizer body ⇒ page 177
- ❑ Fitting position ⇒ page 177
- ❑ pressing on ⇒ page 178

**13 - Circlip**

**14 - 1st gear synchronizer ring**

- ❑ check for wear ⇒ page 176
- ❑ insert in such a way that the recesses lock into the arresters on the sliding sleeve Pos. 12

**15 - Outer ring for 1st gear**

- ❑ fit into synchronizer ring -Pos. 14-, fitting position ⇒ page 178

- ❑ replace if there are any traces of scoring or friction

**16 - Synchronizer ring**

- ❑ (Inner ring for 1st gear)
- ❑ check for wear ⇒ page 176
- ❑ check pegs for wear
- ❑ Fitting position ⇒ page 178

**17 - Needle bearing**

- ❑ for 1st gear

**18 - 1st gear sliding gear**

- ❑ Fitting position ⇒ page 178

**19 - Thrust washers**

- ❑ 1st and 4th gear
- ❑ 2 pieces
- ❑ Insert peg of thrust washer into the hole of the output shaft

**20 - Washer**

- ❑ holds the thrust washers pos. 19 in the correct position on the output shaft

**21 - Needle bearing**

- ❑ for 4th gear

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**22 - 4th gear sliding gear**

**23 - 4th gear synchronizer ring**

- ❑ check for wear ⇒ page 179

**24 - Sliding sleeve with 3rd and 4th gear synchronizer body**

- ❑ after removing the circlip -Pos. 25- remove with the 4th gear sliding gear ⇒ page 175
- ❑ disassembling ⇒ page 177
- ❑ Fitting position of the sliding sleeve with synchronizer body ⇒ page 179
- ❑ Assembling sliding sleeve/synchronizer body ⇒ page 177 and ⇒ page 177
- ❑ pressing on ⇒ page 179

**25 - Circlip**

**26 - 3rd gear synchronizer ring**

- ❑ check for wear ⇒ page 176

**27 - Outer ring for 3rd gear**

- ❑ fit into synchronizer ring -Pos. 26-, fitting position ⇒ page 178
- ❑ replace if there are any traces of scoring or friction

**28 - Synchronizer ring**

- ❑ (Inner ring for 3rd gear)
- ❑ check for wear ⇒ page 176
- ❑ check pegs for wear
- ❑ Fitting position ⇒ page 178

**29 - Needle bearing**

- ❑ for 3rd gear

**30 - 3rd gear sliding gear**

- ❑ Fitting position ⇒ page 178

**31 - Inner ring/tapered-roller bearing**

- ❑ pressing off ⇒ page 175
- ❑ pressing on ⇒ page 179

**32 - Circlip**

- ❑ determine ⇒ page 180 when replacing the tapered-roller bearing -Pos. 31- and the output shaft -Pos. 6-

**33 - Outer ring/tapered-roller bearing**

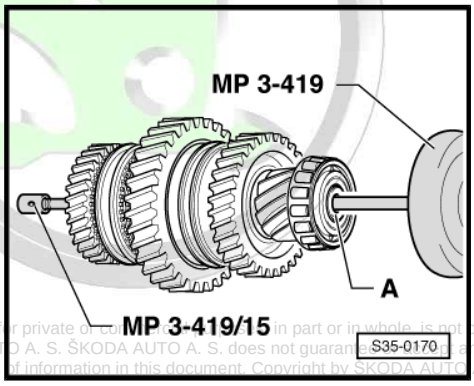
- ❑ removing ⇒ page 180
- ❑ installing ⇒ page 180

**34 - Adjusting washer**

- ❑ Determine thickness ⇒ page 182

**35 - Gearbox housing**

**Removing curved washer -A- from the output shaft**

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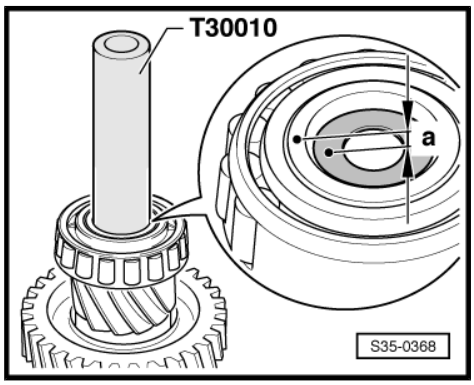
**Press curved washer into the output shaft**

– Press curved washer up to the dimension -a- into the output shaft.

Dimension -a- = 2 mm + 0.5 mm.



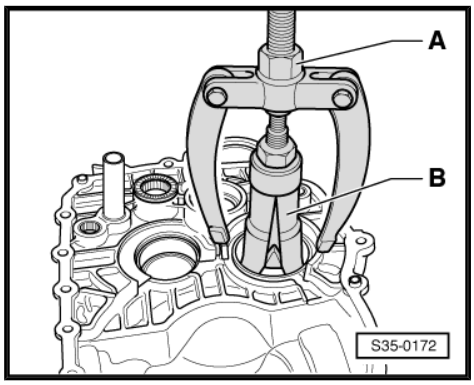

**Note**

*Press in curved washer max. 3 mm - not deeper.*

**Remove outer ring/tapered-roller bearing**

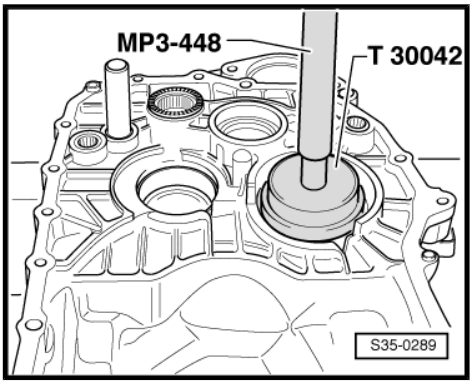
A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 56 … 70 mm , e.g. -Kukko 21/8-



### Press outer ring/tapered-roller bearing into the clutch housing

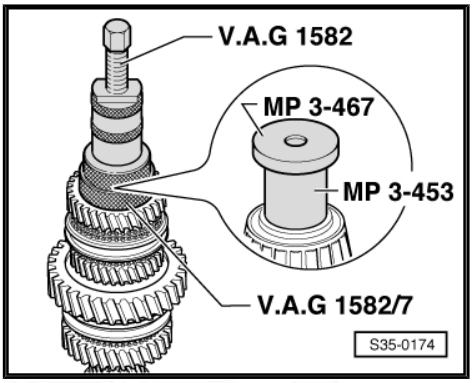
– Support the clutch housing with a pipe section -MP3-450 (VW 415A)- directly below the bearing support.




### Pressing off inner ring/tapered-roller bearing

– First remove the circlip.

– Before fitting the extractor, position thrust piece -MP3-453- in output shaft and lay pressure plate -MP3-467- over it.




### Pressing off 3rd and 4th gear synchronizer body/sliding with sliding gear for 4th gear

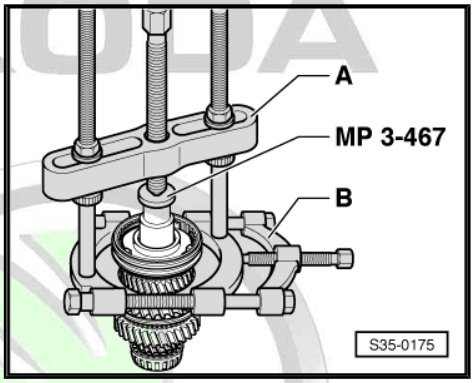
– First remove the circlip.

A - Extractor , e.g. -Kukko 18/2-

B - Separating device 22...115 mm , e.g. -Kukko 17/2-

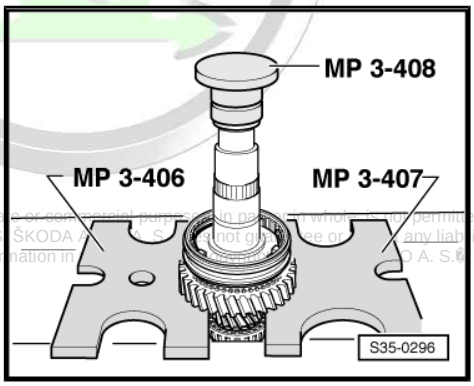
**Note**

- *If necessary, heat the 3rd and 4th gear synchronizer body with a hot-air blower .*
- *After removing, inspect the running gear of the 4th gear sliding gear for damage.*




### Sliding sleeve and synchronizer body for the 1st and 2nd gear

After removing the circlip jointly press off the 2nd gear sliding gear and the sliding sleeve/synchronizer body.

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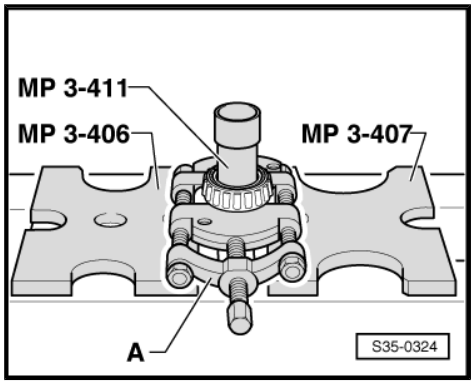
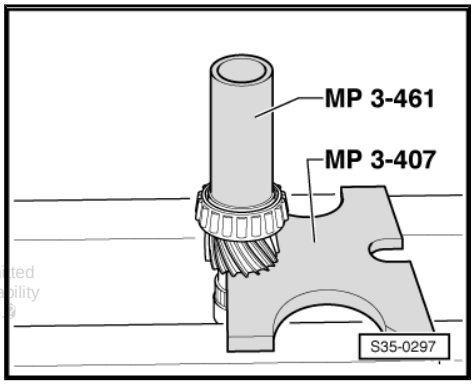
### Pressing off inner ring/tapered-roller bearing

A - Separating device 22...115 mm , e.g. -Kukko 17/2-




### Press on inner ring/tapered-roller bearing

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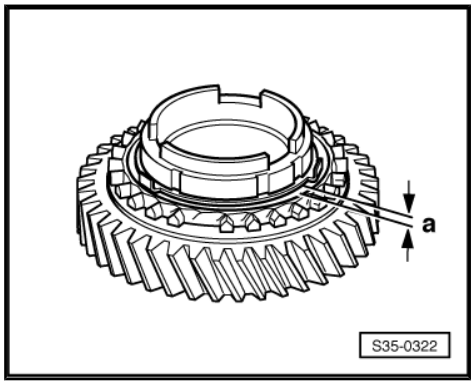
### Check 1st, 2nd and 3rd gear inner ring for wear

– Press the inner ring on the cone of the sliding gear and measure clearance -a- with a feeler gauge.

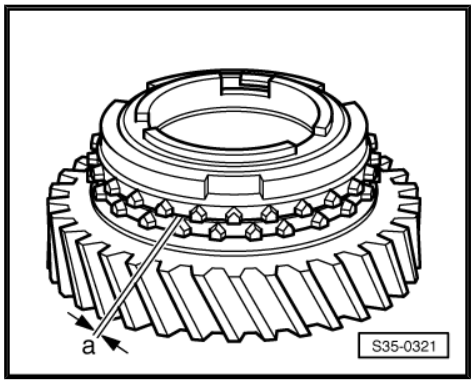
| Clearance -a- | Fitting dimension | Wear limit |
|---|---|---|
| 1st, 2nd and 3rd gear | 0,75…1,25 mm | 0.3 mm |




### Check 1st, 2nd and 3rd gear synchronizer rings for wear

– Press the synchronizer ring, outer ring and inner ring on the cone of the sliding gear and measure clearance -a- with a feeler gauge.

| Clearance -a- | Fitting dimension | Wear limit |
|---|---|---|
| 1st, 2nd and 3rd gear | 1,2…1,8 mm | 0.5 mm |



### Fitting position of the outer ring, inner ring and 2nd gear synchronizer ring

– Position the inner ring -A- on the 2nd gear sliding gear.

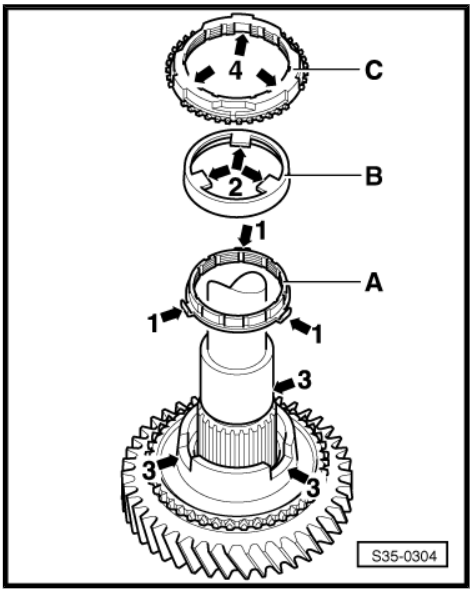
The angled lands -arrow 1- point towards the outer ring -B-.

– Position the outer ring -B-.

Lock the lands -arrows 2- in the recesses -arrows 3- of the sliding gear.

– Position the synchronizer ring -C-.

Lock the recesses -arrows 4- in the lands -arrows 1- of the inner ring -A-.




### Disassembling and assembling the sliding sleeve and 1st, 2nd, 3rd and 4th gear synchronizer body

1 - Spring

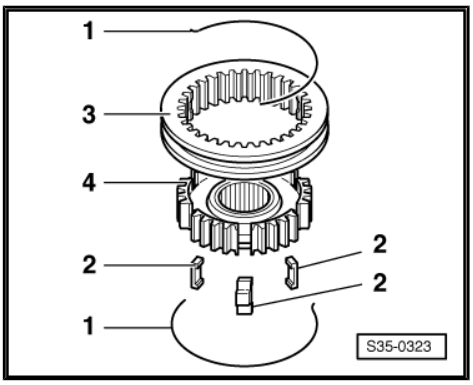
2 - Arresters

3 - Sliding sleeve

4 - Synchronizer body

– Slide the sliding sleeve over the synchronizer body into fitting position ⇒ page 177 or ⇒ page 179 .

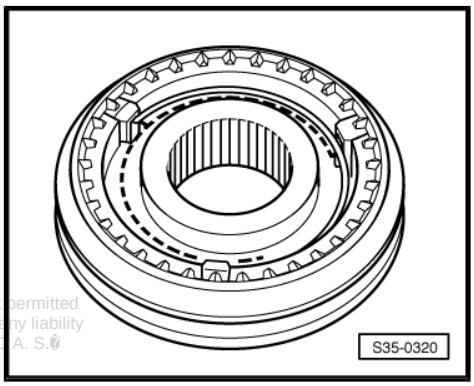
The recesses for the arresters on the synchronizer body and the sliding sleeve must be positioned above one another.




### Assembly of the sliding sleeve/1st, 2nd, 3rd and 4th gear synchronizer body

The sliding sleeve is drawn over the synchronizer body.

– Insert arresters and mount springs with 120° offset. The angled end of the spring must grip into the hollow arrester.

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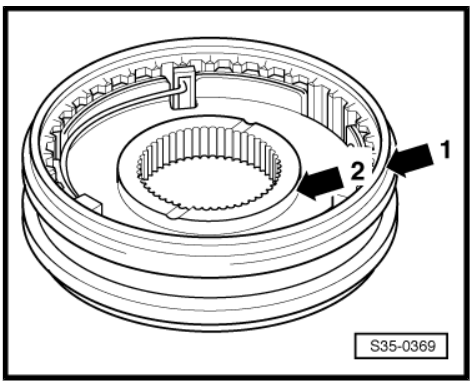
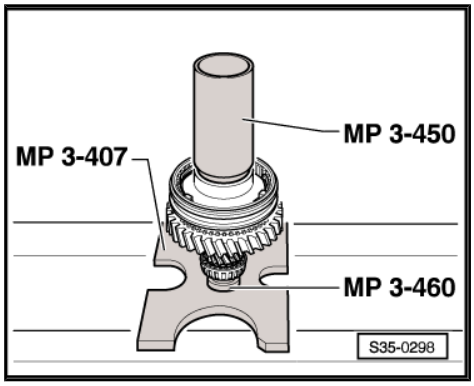
### Fitting position of the 1st and 2nd gear sliding sleeve/synchronizer body

If applicable, the chamfer -arrow 1- on the sliding sleeve and the narrow collar -arrow 2- of the synchronizer body point to the 1st gear.



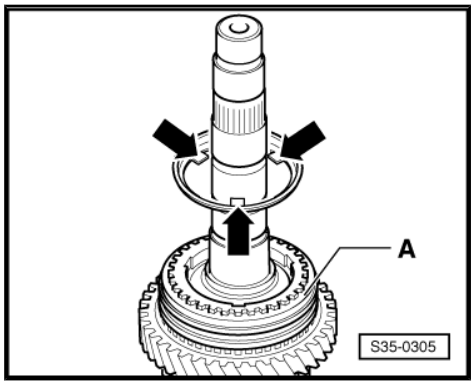
### Press on the sliding sleeve and 1st and 2nd gear synchronizer body

– Install circlip.




### Fitting position of the 1st or 3rd gear outer ring

The pegs -arrows- point towards the synchronizer body/sliding gear -A-.




### Fitting position for synchronizer ring -A- (inner ring 1st or 3rd gear)

Lock the pegs -arrows 1- in the recesses -arrows 2- of the synchronizer ring -B-.

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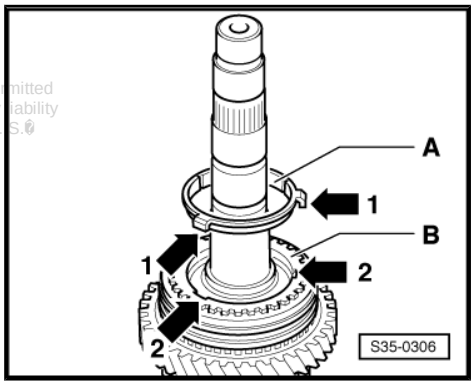
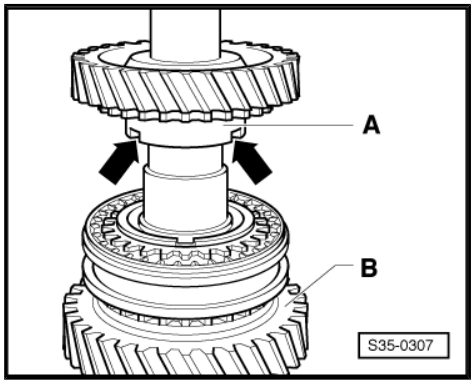


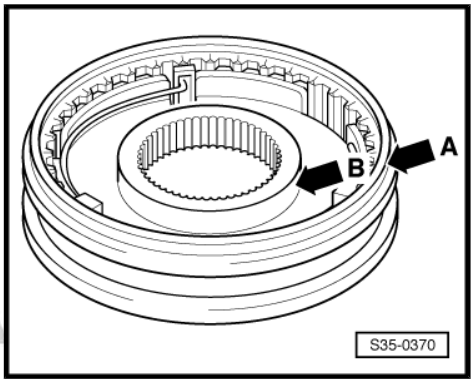

### Fitting position 1st and 3rd gear sliding gear

The higher collar -A- points towards the 2nd or 4th gear -B-. The recesses in the collar -arrows- lock into the pegs of the outer ring ⇒ page 178 .



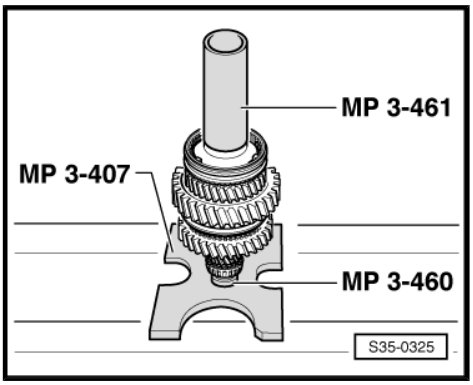
### Fitting position of the sliding sleeve/3rd and 4th gear synchronizer body

The shoulder -arrow A- on the sliding sleeve and the wide collar of the synchronizer body -arrow B- point to the 3rd gear.




### Press on the synchronizer body with the 3rd and 4th gear sliding sleeve

– Install circlip.




### Checking 4th gear synchronizer ring for wear

– Press the synchronizer ring on the cone of the sliding gear and measure clearance -a- with a feeler gauge.

| Clearance -a- | Fitting dimension | Wear limit |
|---|---|---|
| 4th gear | 1,0...1,7 mm | 0.5 mm |

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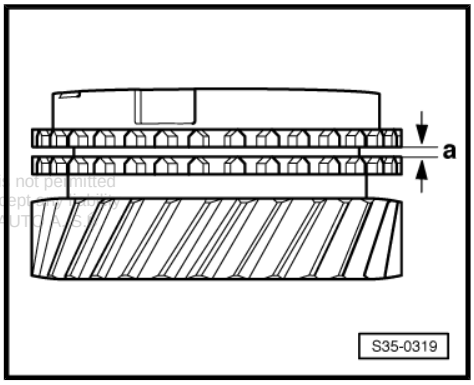
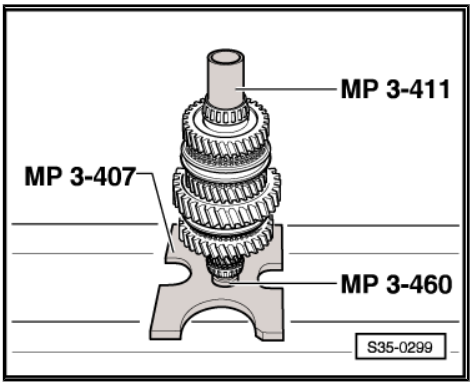



### Press on inner ring/tapered-roller bearing

– Determine the circlip ⇒ page 180 and install.

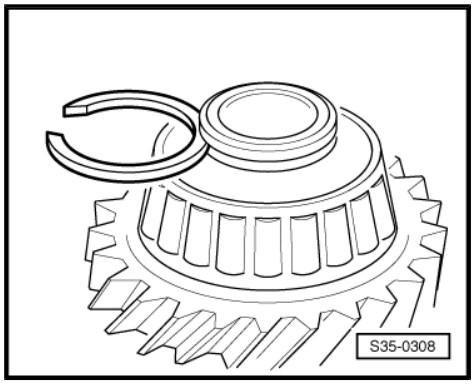


**Determining the circlip**

– Determine the thickest circlip - that can be fitted - and insert.

The following circlips are available:

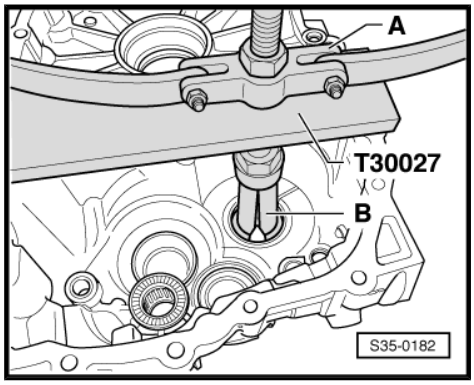
| Thickness (mm) | Part number |
|---|---|
| 1,79 | 02M 311 187 G |
| 1,83 | 02M 311 187 F |
| 1,86 | 02M 311 187 E |
| 1,89 | 02M 311 187 D |
| 1,92 | 02M 311 187 C |
| 1,95 | 02M 311.187 B |
| 1,98 | 02M 311 187 A |




**Remove outer ring/tapered-roller bearing from gearbox housing**

A - Countersupport , e.g. -Kukko 22/2-

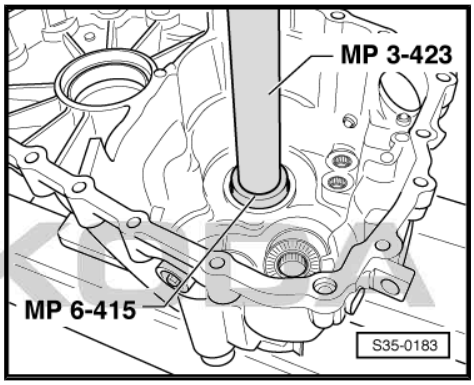
B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-




**Press in outer ring/tapered-roller bearing in the gearbox housing**

– Position adjusting washer under outside ring.

– Support the gearbox housing with a pressure plate -T30042- directly below the bearing support.




## 2.2 Synchronization for 1st through 3rd gear is modified on certain gearboxes

These modification measures affect the following components:

- 1st through 3rd gear sliding gears
- Synchronizer rings for 1st through 3rd gear ⇒ page 181
- Sliding sleeve with 1st and 2nd gear synchronizer body
- Sliding sleeve with 3rd and 4th gear synchronizer body

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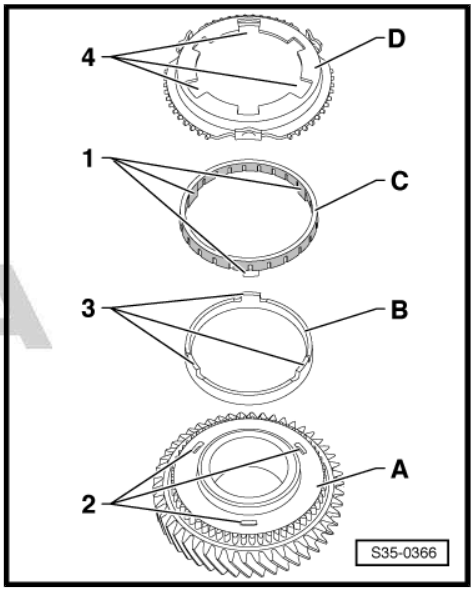
**Note**

- *Assign components via the ⇒ Electronic catalogue of original parts .*
- *If components are not replaced, make sure that they are assigned again to the original gear.*
- *Do not mix up synchronizer rings for 3rd gear with synchronizer rings for 1st and 2nd gear (have different ∅).*
- *Check synchronizer rings for wear ⇒ page 181 or ⇒ page 182 .*




### Fitting position of the 1st through 3rd gear synchronizer rings

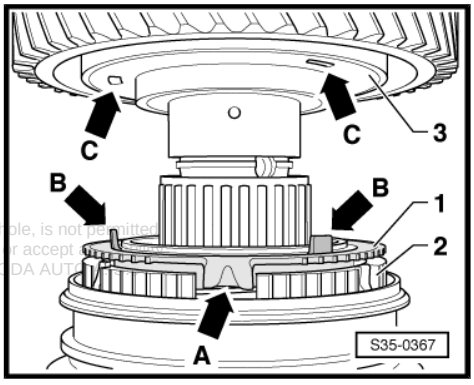
– Position inner ring -B- onto the sliding gear -A-.

– Position intermediate ring -C-.

• The pegs -1- of the intermediate ring must be inserted into the recesses -2- of the sliding gear -A-.

– Position the synchronizer ring -D-.

• The drivers -3- of the inner ring -B- must be inserted into the deeper openings -4- of the synchronizer ring -D-.




### Position 1st and 3rd gear sliding gear with synchronizer rings as follows onto the output shaft

– First the synchronizer ring -1- muss be inserted with the three drivers -arrow A- into the recesses of the synchronizer body -2-.

– Then position the intermediate ring and inner ring into the fitting position ⇒ page 181 .

– During installation, subsequently turn the 1st gear or 3rd gear sliding gear -3- in such a way that the pegs -arrow B- on the intermediate ring are inserted into the recesses -arrow C- of the sliding gear.

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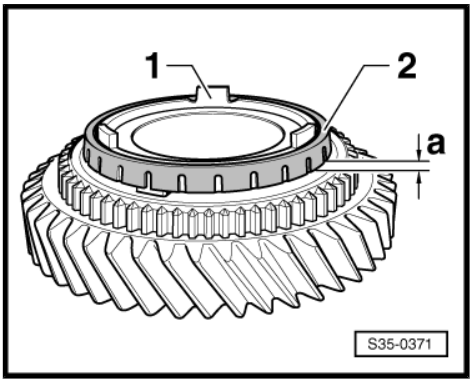


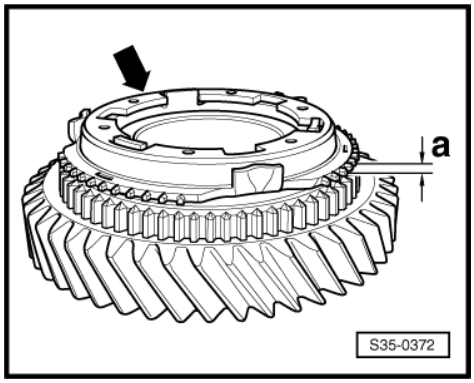

### Inspect the inner friction surface of the intermediate ring -2- for wear

– First position the inner ring -1- and subsequently the intermediate ring -2- in the fitting position ⇒ page 181 onto the sliding gear.

– Press the intermediate ring onto the cone of the inner ring and measure the gap -a- (between sliding gear and intermediate ring) at 3 points, offset by 120°, with a feeler gauge. Note the mean value.

| Clearance -a- | Wear limit |
|---|---|
| 1st, 2nd and 3rd gear | 0.3 mm |

**Check the outer friction surface of the intermediate ring for wear**




– Inspect synchronizer ring -arrow- on the inner friction surface for scoring and radial bearing marks, replace if necessary.

– Position inner ring, intermediate ring and synchronizer ring in fitting position ⇒ page 181 onto the sliding gear and “screw in”.

**Note**

*“Screw in” means: Turn synchronizer rings by one revolution while pressing on the rings simultaneously.*

– Then measure the gap -a- at 3 points, offset by 120°, with a feeler gauge . Note the mean value.

| Clearance -a- | Wear limit |
|---|---|
| 1st, 2nd and 3rd gear | 0.8 mm |

**Note**

- *When measuring, insert the feeler gauge in the area of the synchronizer ring serration.*
- *When measuring, do not push the feeler gauge under the intermediate ring, only measure the gap -a- between sliding gear and synchronizer ring.*
- *Replace the inner ring, intermediate ring and synchronizer ring together for the relevant gear ⇒ Electronic Catalogue of Original Parts .*

## 2.3 Setting output shaft gears 1 through 4

**Special tools and workshop equipment required**

- Washer -MP6-415 (3260)-
- Pressure spindle -MP3-423 (VW 407)-
- Universal dial gauge holder -MP3-447 (VW 387)-
- Retaining plate -T30027 (VW 801)-
- Thrust piece -T30042 (2050)-
- Assembly device -T30069 (VW 792)-
- Interior extractor e.g. -Kukko 21/7-
- Countersupport e.g. -Kukko 22/2-

(Determine adjusting washer for output shaft)

The output shaft must be re-set when the following components are replaced:

- Gearbox housing
- Clutch housing
- Output shaft gears 1 through 4
- Tapered-roller bearing for output shaft

**Requirements:**

- Sealing surfaces of clutch and gearbox housing must be removed of sealant residues.

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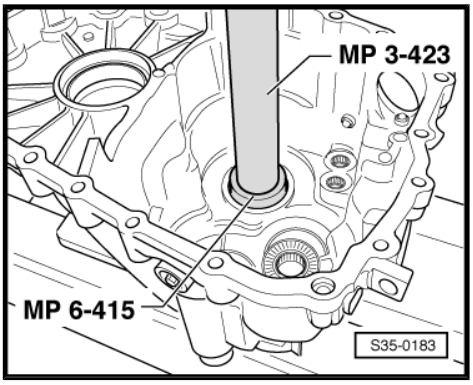
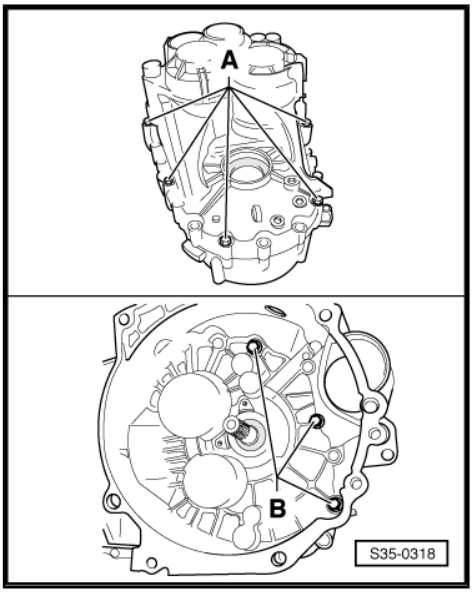
- During the measurement, only install the output shaft to be measured.

– Press outer ring/tapered-roller bearing with a 1.70 mm thick adjusting washer into the gearbox housing. While doing so support the gearbox housing with a pressure plate -T30042- directly below the bearing support.

– Insert complete output shaft gears 1 through 4 into the clutch housing.




– Fit on gearbox housing and tighten screws -A- and -B- crosswise with tightening torque.

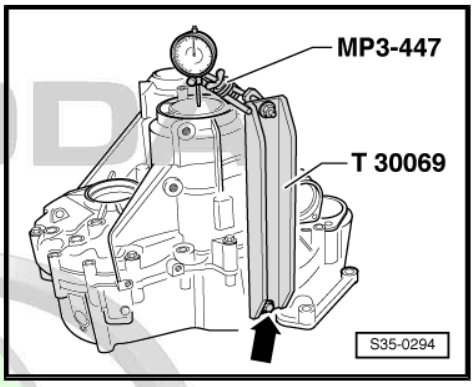



– Mount the measuring tools and fasten with screw -arrow- to the clutch housing.

– Set dial gauge (3 mm measuring range) to “0” with a 1 mm bias.

– Slacken fixing screws of clutch housing/gearbox housing crosswise, until the screws release the gearbox housing or the output shaft.

– Read off measured value on dial gauge and note (example: 0,14 mm).




**Note**

*If no measured value is displayed on the dial gauge when loosening the fixing screws of the clutch housing/gearbox housing, install the adjusting washer 1.95 mm or if necessary the adjusting washer 2.20 mm for the measurement.*

## 2.3.1 Determine the adjusting washer

The prescribed bearing preload is reached by removing the established measured value (0.14 mm) from the inserted adjusting washer (1.70 mm) and by adding a constant compression value (0.20 mm).

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**Example:**

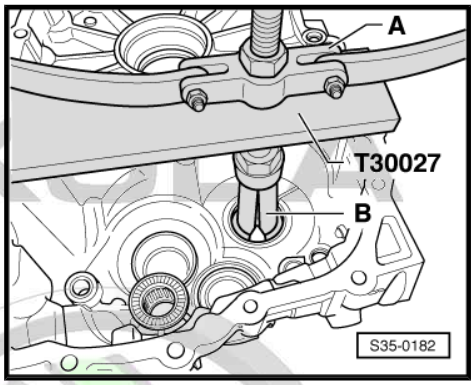
| | |
|---|---|
| inserted washer | 1.70 mm |
| - measured value | 0.14 mm |
| + compression (constant value) | 0.20 mm |
| Thickness of the adjusting washer | 1.76 mm |

– Determine thickness of the adjusting washer according to the table ⇒ page 184 .

– Remove the gearbox housing and pull the outer ring/tapered-roller bearing out of the gearbox housing.

A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-




– Remove the inserted adjusting washer (1.70 mm thick) from the gearbox housing.

**Adjusting washer table**

| Thickness (mm) | Part number |
|---|---|
| 1,45 | 084 409 383 AG |
| 1,50 | 084 409 383 AH |
| 1,55 | 084 409 383 AJ |
| 1,60 | 084 409 383 AK |
| 1,65 | 084 409 383 AL |
| 1,70 | 084 409 383 AM |
| 1,75 | 084 409 383 AN |
| 1,80 | 084 409 383 AP |
| 1,85 | 084 409 383 AQ |
| 1,90 | 084 409 383 AR |
| 1,95 | 084 409 383 AS |
| 2,00 | 084 409 383 AT |
| 2,05 | 084 409 383 BA |
| 2,10 | 084 409 383 BB |
| 2,15 | 084 409 383 BC |
| 2,20 | 084 409 383 BD |
| 2,25 | 084 409 383 BE |

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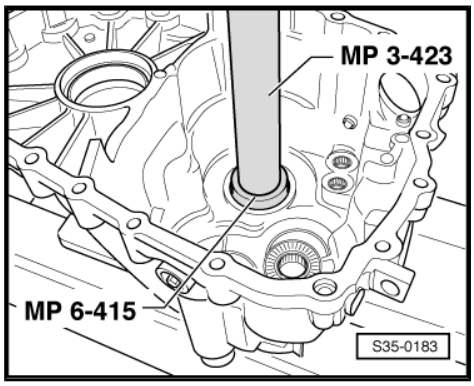
Different tolerances allow to select the required thickness for each washer very precisely.

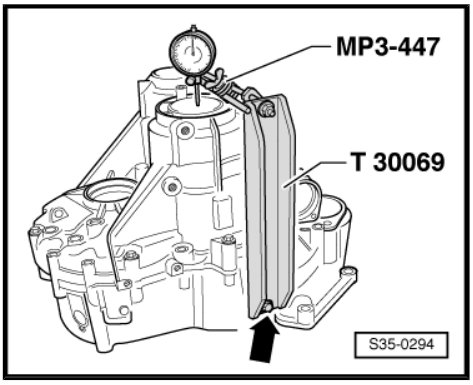
– Press in outer ring/tapered-roller bearing with the determined adjusting washer (in the example: 1.75 mm). While doing so support the gearbox housing with a pressure plate -T30042- directly below the bearing support.




## 2.3.2 Control measurement

- Determined adjusting washer fitted.

– Mount the measuring tools and fasten with screw -arrow- to the clutch housing.
– Set dial gauge (3 mm measuring range) to “0” with a 1 mm bias.
– Slacken fixing screws of clutch housing/gearbox housing crosswise, until the screws release the gearbox housing or the output shaft.
– The dial gauge must indicate a value of 0.15 mm to 0.25 mm if the adjusting washer has been correctly chosen.

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# 3 Output shaft 5th/6th gear/reverse gear

**Special tools and workshop equipment required**

- Pressure plate -MP3-406 (VW 401)-
- Pressure plate -MP3-407 (VW 402)-
- Pipe -MP3-408 (VW 412)-
- Base -MP3-410 (VW 434)-
- Thrust piece -MP3-411 (VW 454) -
- Drive bushing -MP3-412 (VW 455)-
- Base -MP3-413 (VW 510)-
- Pipe -MP3-423 (VW 407)-
- Drift pin -MP3-448 (VW 408)-
- Knock-in bushing -MP3-450 (VW 415A)-
- Thrust piece -MP3-453 (VW 431) -
- Alignment rails -MP3-457 (VW 457) -
- Knock-in bushing -MP3-461 (VW 519)-
- Base -MP3-467 (40-105)-
- Thrust piece - MP3-4014 (VW 432)-
- Base -MP6-415 (3260)-
- Assembly stand -MP9-101-
- Gearbox mount -T30109 (VW 353)-
- Gearbox mount -T30108-
- Retaining plate -T30027 (VW 801)-
- Thrust piece -T30042 (2050)-
- Pipe -T30055 (3296)-
- Thrust piece -T30091 (40 - 202) -
- Tapered-roller bearing extractor -V.A.G 1582-
- Gripper -V.A.G 1582/4-
- Gripper -V.A.G 1582/7-
- Separating device , e.g. -Kukko 17/2-
- Interior extractor e.g. -Kukko 21/7-
- Countersupport e.g. -Kukko 22/2 -

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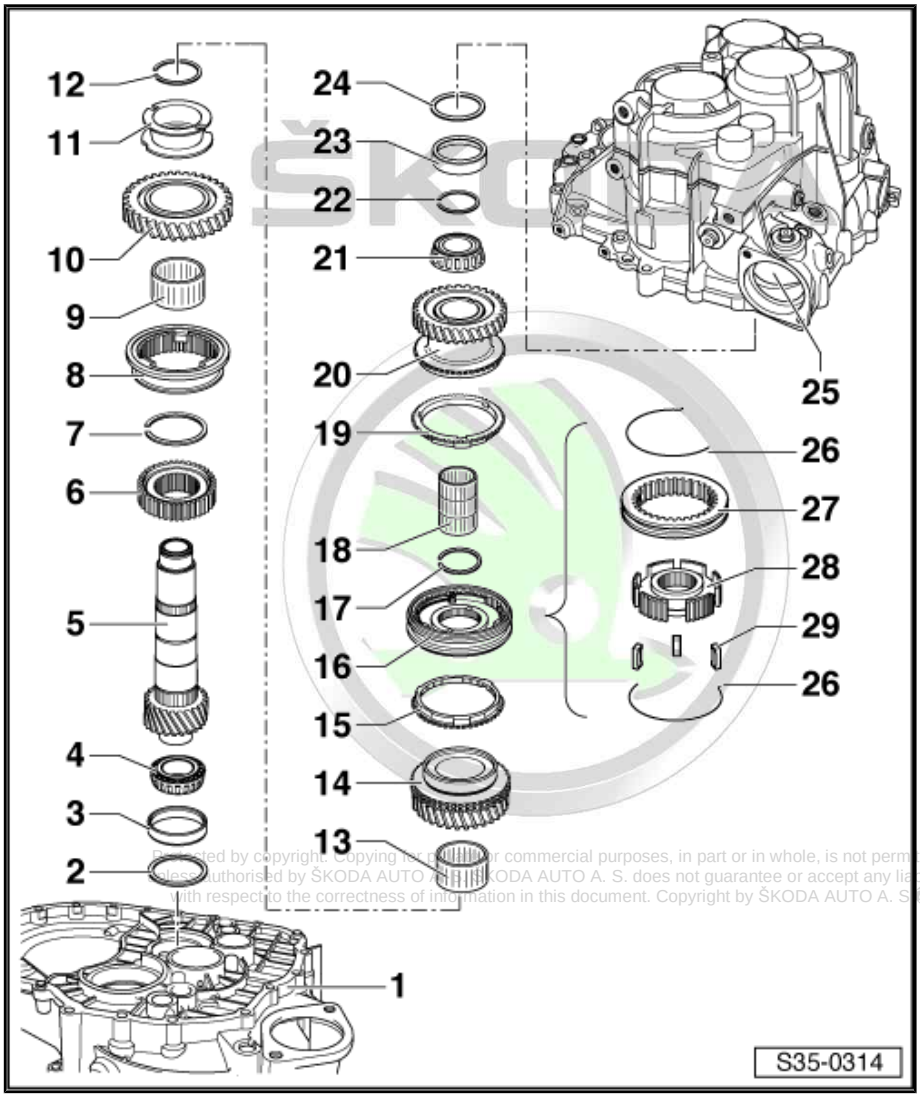
## 3.1 Disassembling and assembling output shaft 5th/6th and reverse gear

**Note**

- *If the output shaft or tapered-roller bearing is replaced, it is necessary to adjust the output shaft* *⇒ page 193* *.*
- *Replace both tapered-roller bearings together.*




**1 - Clutch housing**

**2 - Base**

- ❑ always 0.65 mm thick

**3 - Outer ring/tapered-roller bearing**

- ❑ removing ⇒ page 188
- ❑ pressing on ⇒ page 188

**4 - Inner ring/tapered-roller bearing**

- ❑ remove ⇒ page 190
- ❑ pressing on ⇒ page 192

**5 - Output shaft**

- ❑ 5th/6th and reverse gear
- ❑ adjust ⇒ page 193

**6 - Reverse gear synchronizer body**

- ❑ pressing off ⇒ page 189
- ❑ Fitting position ⇒ page 190
- ❑ pressing on ⇒ page 190

**7 - Circlip**

**8 - Reverse gear sliding sleeve**

- ❑ with synchronizer ring

**9 - Needle bearing (polygon bearing)**

- ❑ for reverse gear sliding gear

**10 - Reverse gear sliding gear**

**11 - Bushing**

- ❑ pressing off with reverse gear sliding gear ⇒ page 189
- ❑ Fitting position: broad collar of bushing points to the reverse gear sliding gear
- ❑ pressing on ⇒ page 190

**12 - Circlip**

**13 - Needle bearing (polygon bearing)**

- ❑ for 6th gear

**14 - 6th gear sliding gear**

**15 - 6th gear synchronizer ring**

- ❑ check for wear ⇒ page 191

**16 - Sliding sleeve with 5th and 6th gear synchronizer body**

- ❑ after removing the circlip -Pos. 17- press off with the 6th gear sliding gear ⇒ page 189
- ❑ disassembling ⇒ page 191
- ❑ Assembling sliding sleeve/synchronizer body ⇒ page 191 and ⇒ page 191
- ❑ pressing on ⇒ page 191

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**17 - Circlip**

**18 - Needle bearing (polygon bearing)**

- ❑ for 5th gear

**19 - 5th gear synchronizer ring**

- ❑ check for wear ⇒ page 191

**20 - 5th gear sliding gear**

**21 - Inner ring/tapered-roller bearing**

- ❑ remove ⇒ page 189
- ❑ pressing on ⇒ page 192

**22 - Circlip**

- ❑ determine ⇒ page 192 when replacing the tapered-roller bearing -Pos. 21- and the output shaft -Pos. 5-

**23 - Outer ring/tapered-roller bearing**

- ❑ removing ⇒ page 192
- ❑ pressing on ⇒ page 193

**24 - Adjusting washer**

- ❑ Determine thickness ⇒ page 194

**25 - Gearbox housing**

**26 - Spring**

- ❑ Fitting position ⇒ page 191

**27 - Sliding sleeve**

**28 - Synchronizer body**

**29 - Arresters (3 pieces)**

- ❑ Fitting position ⇒ page 191

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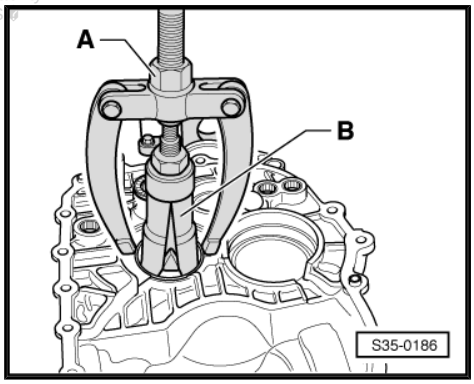
**Remove outer ring/tapered-roller bearing**

A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-

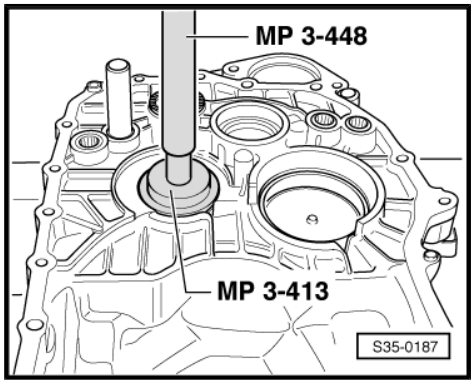



**Note**

*After pulling out the washer check for damage, if necessary replace.*

**Press outer ring/tapered-roller bearing into the clutch housing**

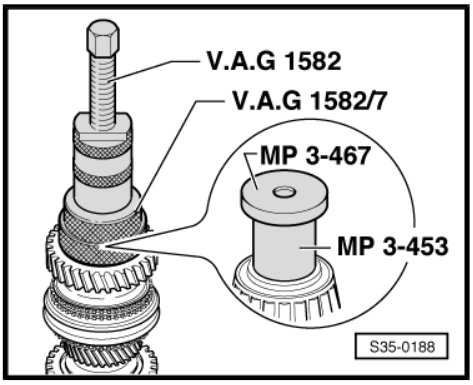
- Position washer under outside ring.
- Support the clutch housing with a pressure plate -T30091- directly below the bearing support.



**Removing inner ring/tapered-roller bearing**

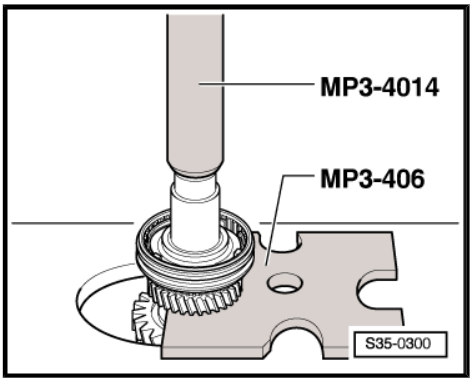
– First remove the circlip.

– Before fitting the extractor position thrust piece -MP3-453- and pressure plate -MP3-467- on output shaft.



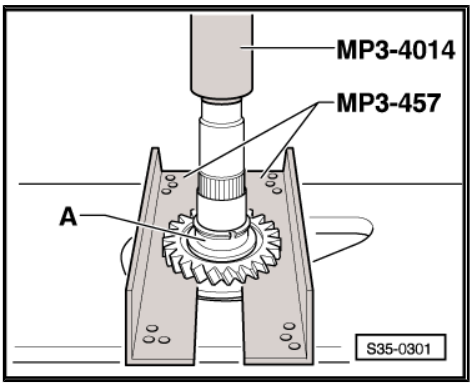

**Pressing off 5th and 6th gear synchronizer body/sliding with sliding gear for 6th gear**

– First remove the circlip.




**Pressing off bushing -A- with reverse gear sliding gear**

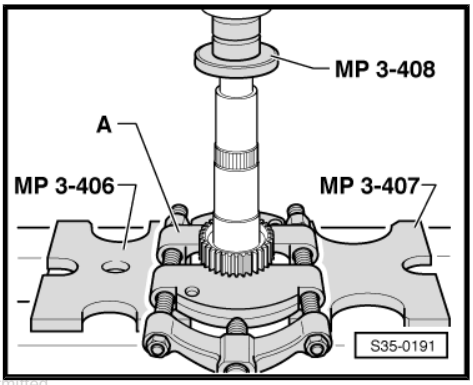
– First remove the circlip.




**Pressing off reverse gear synchronizer body**

– First remove the circlip.

A - Separating device 22...115 mm , e.g. -Kukko 17/2-

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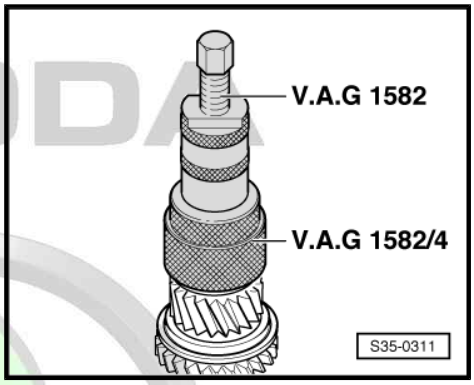
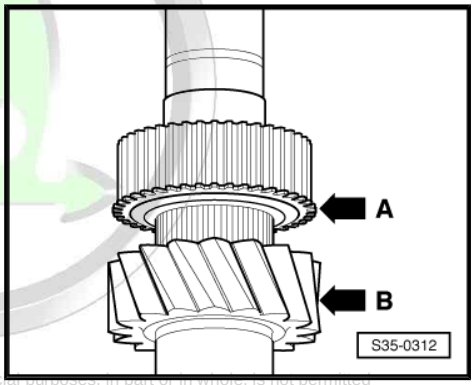
### Removing inner ring/tapered-roller bearing

– Before fitting the extractor, position pressure plate -MP3-410- on the output shaft.




### Fitting position of reverse gear synchronizer body

The stop -arrow A- for the reverse gear sliding sleeve points towards the output shaft serration -arrow B-.

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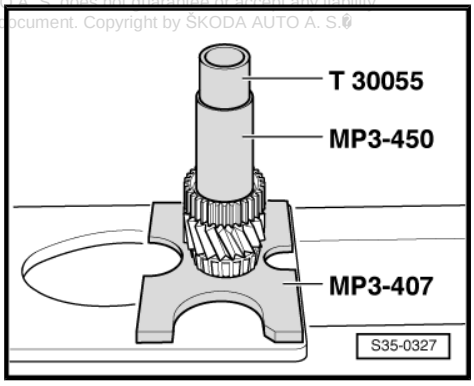
### Pressing on reverse gear synchronizer body

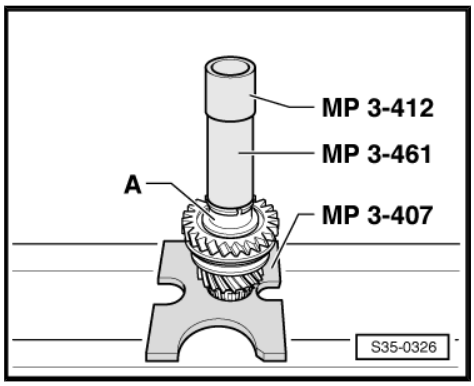
– Install circlip.




### Pressing on bushing -A-

Fitting position: Broad collar points towards the reverse gear sliding gear.

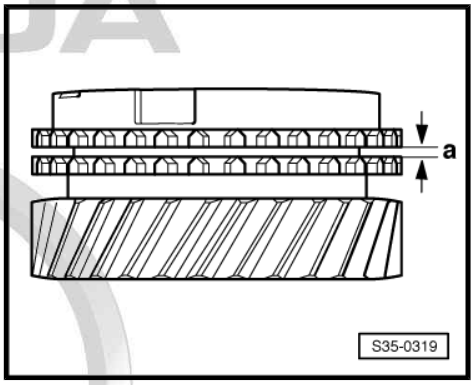
– Install circlip.



### Check 5th and 6th gear synchronizer ring for wear

– Press the synchronizer ring on the cone of the sliding gear and measure clearance -a- with a feeler gauge.

| Clearance -a- | Fitting dimension | Wear limit |
|---|---|---|
| 5th and 6th gear | 1,0…1,7 mm | 0.5 mm |




### Disassembling and assembling the sliding sleeve and 5th and 6th gear synchronizer body

1 - Spring

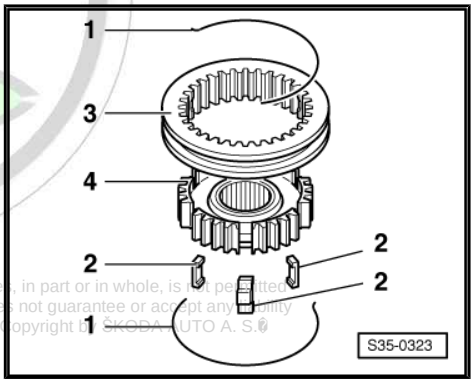
2 - Arresters

3 - Sliding sleeve

4 - Synchronizer body

– Slide the sliding sleeve over the synchronizer body.

The recesses for the arresters on the synchronizer body and the sliding sleeve must be positioned above one another.

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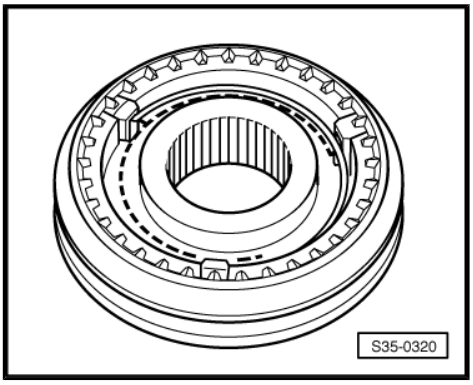
### Assembly of the sliding sleeve/5th and 6th gear synchronizer body

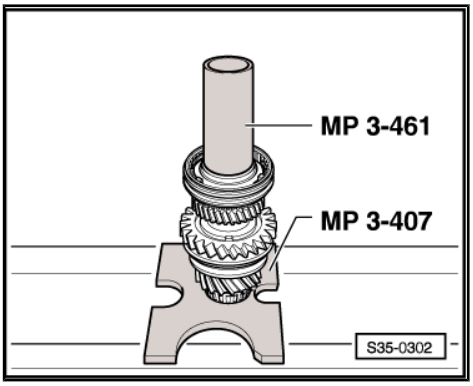
The sliding sleeve is drawn over the synchronizer body.

– Insert arresters and mount springs with 120° offset. The angled end of the spring must grip into the hollow arrester.



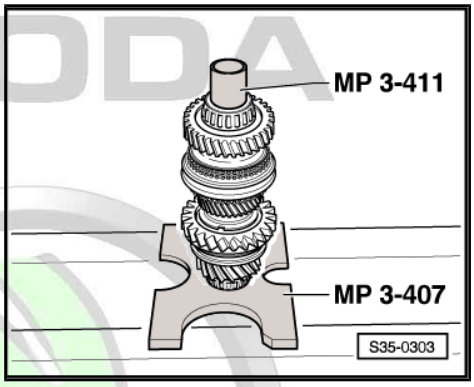

### Press on the sliding sleeve and 5th and 6th gear synchronizer body

– Install circlip.



### Press on inner ring/tapered-roller bearing

– Determine the circlip ⇒ page 192 and install.

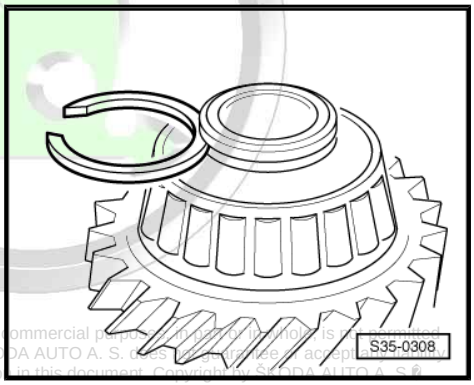



### Determining the circlip

– Determine the thickest circlip - that can be fitted - and insert.

The following circlips are available:

| Thickness (mm) | Part number |
|---|---|
| 1,79 | 02M 311 187 G |
| 1,83 | 02M 311 187 F |
| 1,86 | 02M 311 187 E |
| 1,89 | 02M 311 187 D |
| 1,92 | 02M 311 187 C |
| 1,95 | 02M 311.187 B |
| 1,98 | 02M 311 187 A |

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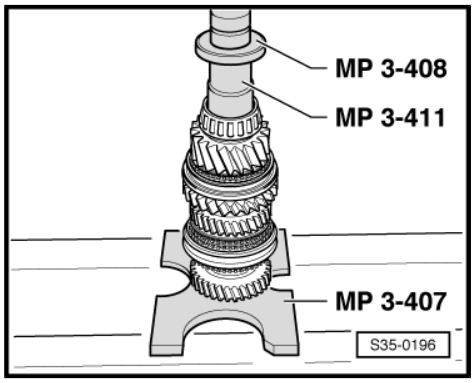
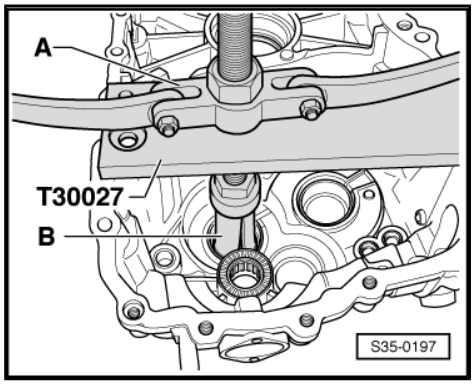
### Press on inner ring/tapered-roller bearing




### Remove outer ring/tapered-roller bearing from gearbox housing

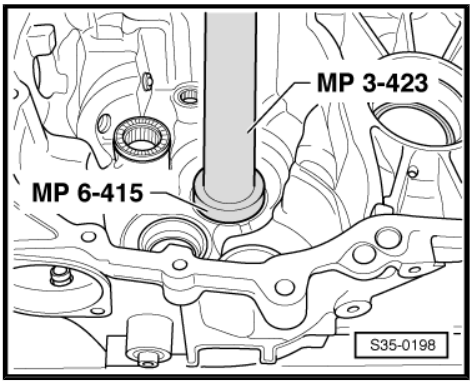
A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-



**Press in outer ring/tapered-roller bearing in the gearbox housing**

– Support the gearbox housing with a pressure plate -T30042- directly below the bearing support.




## 3.2 Setting output shaft 5th/6th and reverse gear

**Special tools and workshop equipment required**

- Base -MP6-415 (3260)-
- Pipe -MP3-423 (VW 407)-
- Universal dial gauge holder -MP3-447 (VW 387)-
- Gearbox mount -T30109 (VW 353)-
- Gearbox mount -T30108-
- Retaining plate -T30027 (VW 801)-
- Thrust piece -T30042 (2050)-
- Assembly device -T30069 (VW 792)-
- Interior extractor e.g. -Kukko 21/7-
- Countersupport e.g. -Kukko 22/2 -

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The output shaft must be re-set when the following components are replaced:

- Gearbox housing
- Clutch housing
- Output shaft 5th/6th gear/reverse gear
- Tapered-roller bearing for output shaft

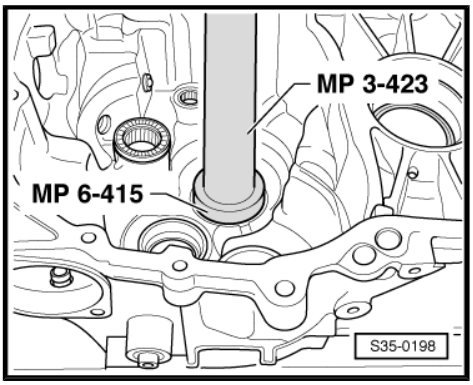
Setting overview ⇒ page 210

**Requirements:**

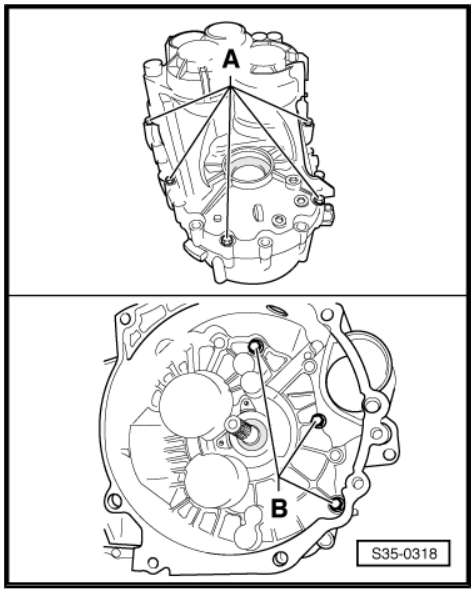
- Sealing surfaces of clutch and gearbox housing must be removed of sealant residues.
- During the measurement, only install the output shaft to be measured.

– Press outer ring/tapered-roller bearing with a 1.70 mm thick adjusting washer into the gearbox housing. While doing so support the gearbox housing with a pressure plate -T30042- directly below the bearing support.

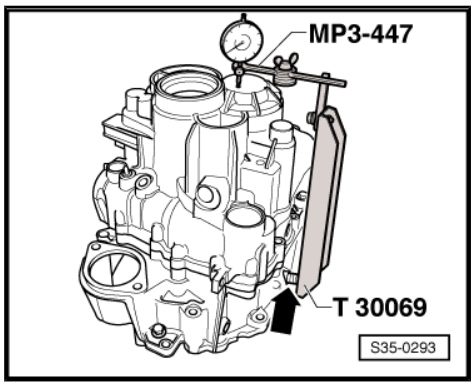
– Insert complete output shaft 5th/6th gear and reverse gear into the clutch housing.



– Fit on gearbox housing and tighten screws -A- and -B- crosswise with tightening torque.




– Mount the measuring tools. Fit washers with a total thickness of 8 mm at the fixing screws -arrow- for assembly device -T30069- onto the clutch housing.
– Set dial gauge (3 mm measuring range) to “0” with a 1 mm bias.
– Slacken fixing screws of clutch housing/gearbox housing crosswise, until the screws release the gearbox housing or the output shaft.
– Read off measured value on dial gauge and note (example: 0.25 mm).




**Note**

*If no measured value is displayed on the dial gauge when loosening the fixing screws of the clutch housing/gearbox housing, install the adjusting washer 1.95 mm or if necessary the adjusting washer 2.20 mm for the measurement.*

## 3.2.1 Determine the adjusting washer

The prescribed bearing preload is reached by removing the established measured value (0,25 mm) from the inserted adjusting washer (1.70 mm) and by adding a constant compression value (0.20 mm).

**Example:**

| | |
|---|---|
| inserted washer | 1.70 mm |
| - measured value | 0.25 mm |
| + pressure (const. value) | 0.20 mm |
| Thickness of the adjusting washer | 1.65 mm |

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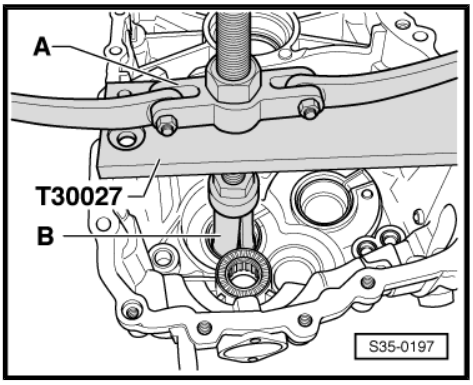
– Determine thickness of the adjusting washer according to the table ⇒ page 195 .

– Remove the gearbox housing and pull the outer ring/tapered-roller bearing out of the gearbox housing.

A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-

– Remove the inserted adjusting washer (1.70 mm thick) from the gearbox housing.

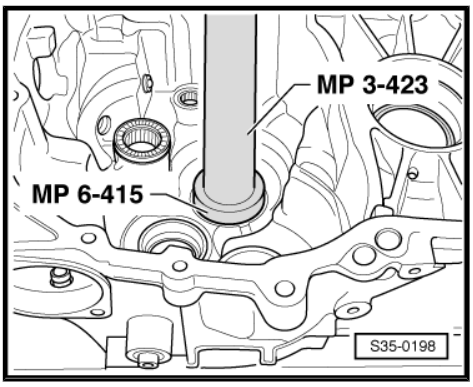



**Adjusting washer table**

| Thickness (mm) | Part number |
|---|---|
| 1,50 | 084 409 383 AH |
| 1,55 | 084 409 383 AJ |
| 1,60 | 084 409 383 AK |
| 1,65 | 084 409 383 AL |
| 1,70 | 084 409 383 AM |
| 1,75 | 084 409 383 AN |
| 1,80 | 084 409 383 AP |
| 1,85 | 084 409 383 AQ |
| 1,90 | 084 409 383 AR |
| 1,95 | 084 409 383 AS |
| 2,00 | 084 409 383 AT |
| 2,05 | 084 409 383 BA |
| 2,10 | 084 409 383 BB |
| 2,15 | 084 409 383 BC |
| 2,20 | 084 409 383 BD |
| 2,25 | 084 409 383 BE |

Different tolerances allow to select the required thickness for each washer very precisely.

– Press in outer ring/tapered-roller bearing with the determined adjusting washer (in the example: 1,65 mm). While doing so support the gearbox housing with a pressure plate -T30042- directly below the bearing support.




## 3.2.2 Control measurement

- Determined adjusting washer fitted.

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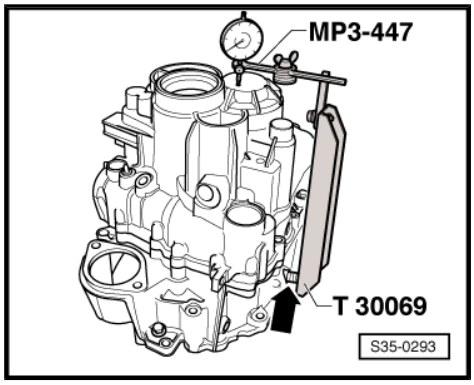
– Mount the measuring tools. Fit washers with a total thickness of 8 mm at the fixing screws -arrow- for assembly device - T30069- onto the clutch housing.
– Set dial gauge (3 mm measuring range) to “0” with a 1 mm bias.
– Slacken fixing screws of clutch housing/gearbox housing crosswise, until the screws release the gearbox housing or the output shaft.
– The dial gauge must indicate a value of 0.15 mm to 0.25 mm if the adjusting washer has been correctly chosen.

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# 39 – Final drive, differential gear

## 1 Replacing gasket rings for flange shaft or rigid shaft with gearbox installed

### 1.1 Replacing the left flange shaft gasket ring (front-wheel drive and four-wheel drive)

**Special tools and workshop equipment required**

- Multi-purpose tool -MP3-419 (VW 771)-
- Extraction hook -MP3-419/37 (VW 771/37)-
- Thrust piece -T30028 (3305)-
- Catch pan
- Sealing grease -G 052 128 A1-

#### 1.1.1 Removing

– Remove front left wheel ⇒ Chassis ⇒ Rep. Gr. 44 and raise vehicle.

– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

– Remove the front left wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .

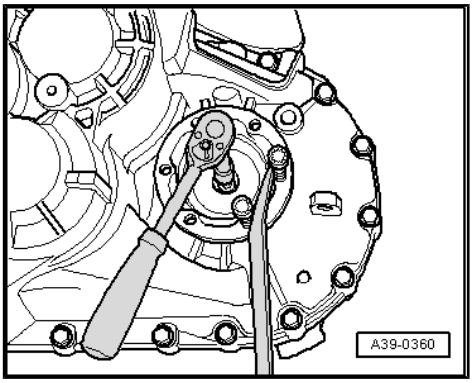
– Turn steering to full left lock.

– Remove left drive shaft ⇒ Chassis ⇒ Rep. Gr. 40 .

– Position the catch pan under the gearbox.

– Release the fixing screw for the flange shaft, to this end insert two screws in the flange and counterhold the flange shaft using an assembly lever.

– Remove the flange shaft with pressure spring.

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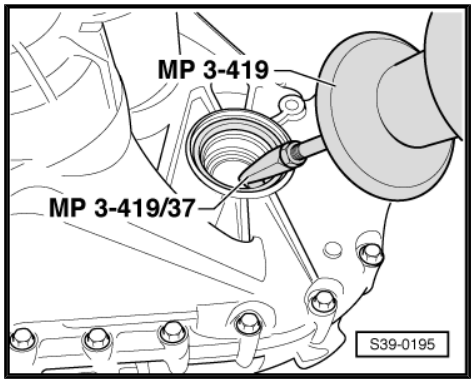
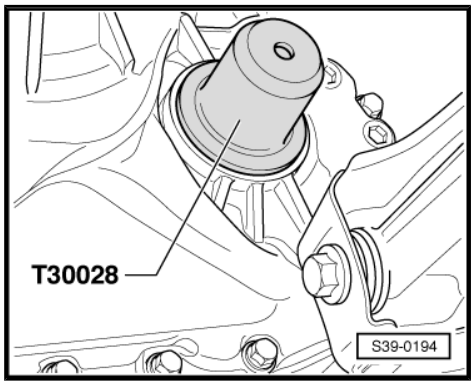
– Pull out gasket ring for flange shaft with multi-purpose tool -MP3-419- and -MP3-419/37- .




## 1.1.2 Install

– Drive the new seal ring in up to the stop, do not twist the seal ring.
– Fill half the space between the sealing lip and dust lip with sealing grease -G 052 128 A1- .
– Insert the flange shaft.
– Secure the flange shaft with the conical screw and tighten with tightening torque.
– Install left drive shaft ⇒ Chassis ⇒ Rep. Gr. 40 .
– Inspecting gear oil ⇒ page 100 .
– Install the front left wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .
– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
– Install wheel ⇒ Chassis ⇒ Rep. Gr. 44 .




**Tightening torque**

| Component | Nm |
|---|---|
| Flange shaft on gearbox (conical screw) | ⇒ page 117 |

## 1.2 Replacing the right rigid shaft gasket ring (front-wheel drive)

**Special tools and workshop equipment required**

- Thrust piece -T40007-
- Catch pan
- Sealing grease -G 052 128 A1-
- Grease for plug serration of clutch disc -G 000 100-

## 1.2.1 Removing

– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

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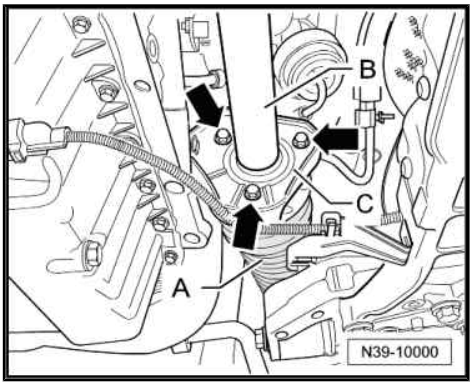
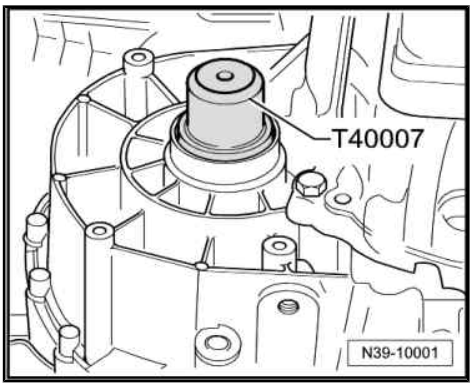
– Remove right drive shaft -A- ⇒ Chassis ⇒ Rep. Gr. 40 .
– Unscrew -arrows- intermediate shaft -B- from bracket -D- and pull off from the rigid shaft of the gearbox.
– Release fixing screw for rigid shaft.
– Position the catch pan under the gearbox.
– Remove the rigid shaft with pressure spring.
– Lever out gasket ring with assembly lever.

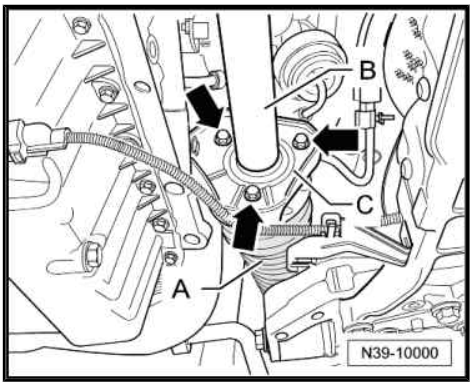



## 1.2.2 Install

– Drive the new seal ring in up to the stop, do not twist the seal ring.
– Fill half the space between the sealing lip and dust lip with sealing grease -G 052 128 A1- .
– Replace the O-ring on the rigid shaft.
– Insert rigid shaft.
– Secure the rigid shaft with the conical screw and tighten with tightening torque.
– Grease the spline on the rigid shaft with grease for plug serration of clutch disc -G 000 100- .




– Guide the intermediate shaft -B- through the bracket -C- onto the rigid shaft of the gearbox.
– Tighten intermediate shaft to bracket -arrows- ⇒ Chassis ⇒ Rep. Gr. 40 .
– Install right drive shaft -A- ⇒ Chassis ⇒ Rep. Gr. 40 .
– Inspecting gear oil ⇒ page 100 .
– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

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**Tightening torque**

| Component | Nm |
|---|---|
| Rigid shaft on gearbox (conical screw) | ⇒ page 119 |

# 1.3 Replacing the right flange shaft gasket ring (front-wheel drive)

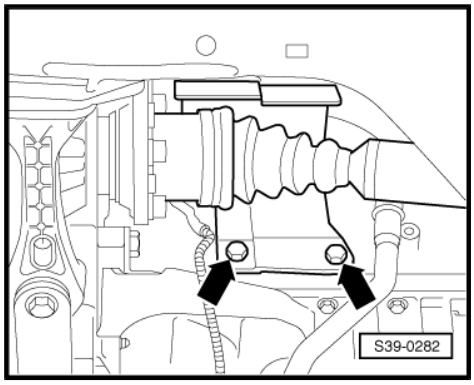
**Special tools and workshop equipment required**

♦ Thrust piece -T30028 (3305)-
♦ Catch pan
♦ Sealing grease -G 052 128 A1-

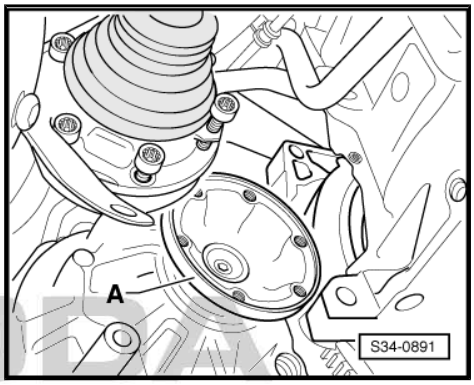
## 1.3.1 Removing

– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

– Remove heat shield for right drive shaft (if present) from the engine -arrows-.

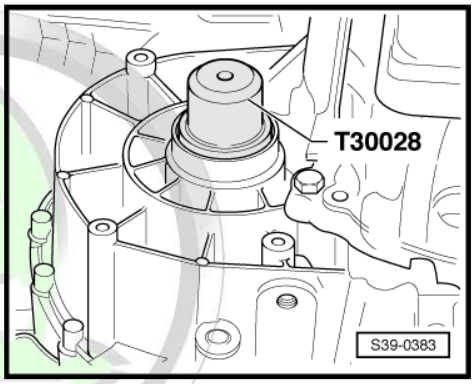



– Unscrew right drive shaft from the flange shaft -A- of the gearbox ⇒ Chassis ⇒ Rep. Gr. 40 .
– Tie up the drive shaft as far as possible. Avoid damaging the paintwork on the drive shaft during this operation.
– Position the catch pan under the gearbox.
– Release the fixing screw for the right flange shaft, to this end insert two screws in the flange and counterhold the flange shaft using an assembly lever.
– Remove the flange shaft with pressure spring.
– Lever out gasket ring with assembly lever.




## 1.3.2 Install

– Drive the new seal ring in up to the stop, do not twist the seal ring.
– Fill half the space between the sealing lip and dust lip with sealing grease -G 052 128 A1- .
– Insert the flange shaft.
– Secure the flange shaft with the conical screw and tighten with tightening torque.
– Attach the right drive shaft to the flange shaft of the gearbox ⇒ Chassis ⇒ Rep. Gr. 40 .
– Install heat shield for right drive shaft (if present) at the engine.
– Inspecting gear oil ⇒ page 100 .
– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .




**Tightening torques**

| Component | Nm |
|---|---|
| Flange shaft on gearbox (conical screw) | ⇒ page 119 |
| Heat shield of drive shaft to engine | ⇒ page 99 |

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## 1.4 Replacing the right flange shaft gasket ring (four-wheel drive)

**Special tools and workshop equipment required**

♦ Thrust piece -MP3-410 (VW 434)-
♦ Ejection lever -MP3-418 (VW 681)-
♦ Extractor -T10037-

- Thrust piece -T10049-
- Socket insert -T10107A-
- Catch pan
- Sealing grease -G 052 128 A1-

## 1.4.1 Removing

– Loosen the front right wheel bolts.

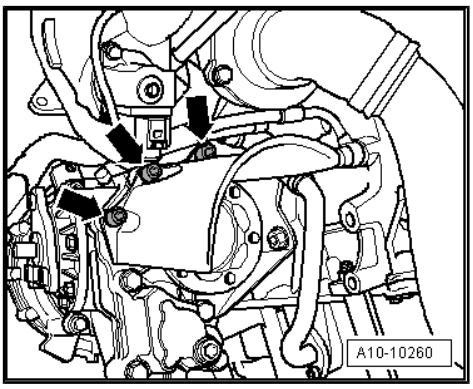
– Raise vehicle ⇒ Maintenance ; Octavia II .

– Detach the right front wheel ⇒ Chassis ⇒ Rep. Gr. 44 .

– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

– Remove the front right wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .

– If present, remove heat shield for drive shaft -arrows-.

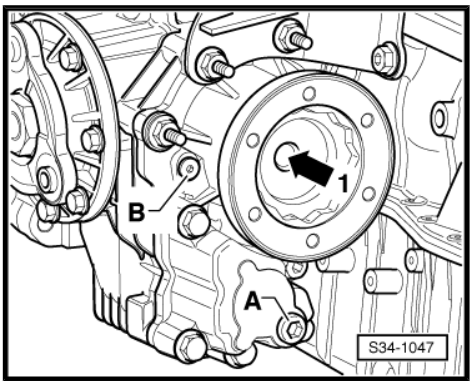



– Remove right drive shaft ⇒ Chassis ⇒ Rep. Gr. 40 .

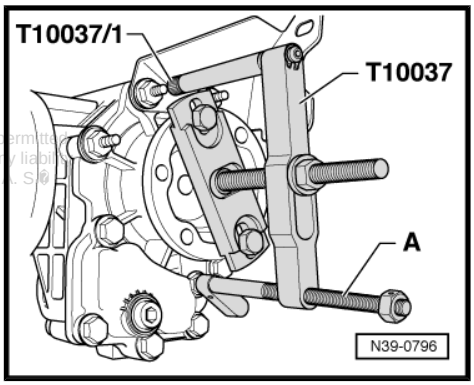
– On vehicles with particle filter if necessary remove the bracket for the particle filter ⇒ Engine ⇒ Rep. Gr. 26 .

– Position the catch pan under the angle gearbox.

– Remove the right flange shaft bolt -arrow- using the socket insert -T10107A- .




– Screw extractor -T10037- onto right flange shaft.




**Note**

*Use the extractor -T10037- to remove the right flange shaft so that the polygon bearings on the flange shaft are not damaged.*

– Insert the thrust piece -MP3-410- between the gearbox carrier and the knurled nut -T10037/1- .

– Align the extractor -T10037- with the support -A- parallel to the flange.

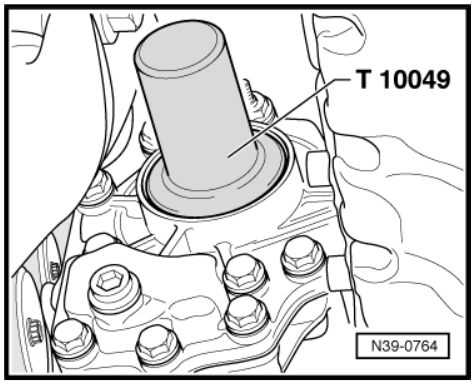
– Take out the flange shaft.

– Remove gasket ring with ejection lever -MP3-418- .

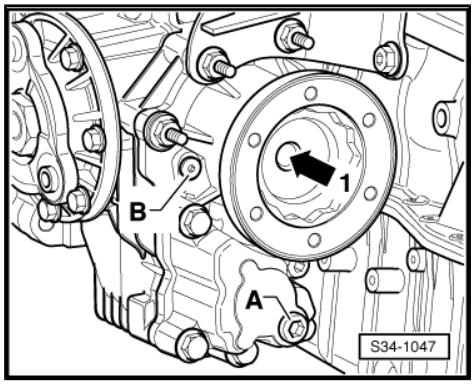
## 1.4.2 Install

– Lightly oil new gasket ring at outer surface.

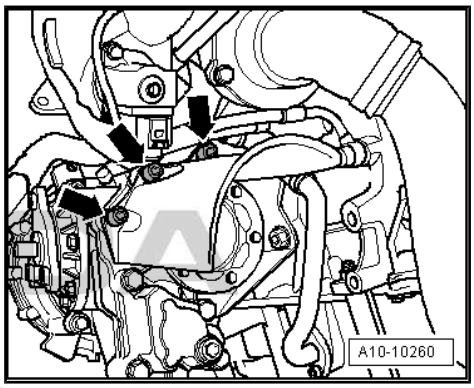
– Drive in the new gasket ring with thrust piece -T10049- up to the stop, do not twist the new gasket ring.
– Fill half the space between the sealing lip and dust lip with sealing grease -G 052 128 A1- .
– Carefully drive in flange shaft (slowly turn flange shaft).




– Tighten the screw of the flange shaft -arrow 1- with socket insert -T10107A- .
– After installing the right flange shaft, check the gear oil level in the angle gearbox ⇒ page 109 , to do so unscrew the oil filler plug -B-.
– On vehicles with particle filter install the bracket for the particle filter, if it was removed ⇒ Engine ⇒ Rep. Gr. 26 .
– Install right drive shaft ⇒ Chassis ⇒ Rep. Gr. 40 .




– Install heat shield for drive shaft -arrows-, if it was removed.
– Install the front right wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .
– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
– Attach the right front wheel ⇒ Chassis ⇒ Rep. Gr. 44 .




**Tightening torques**

| Component | Nm |
|---|---|
| Flange shaft on gearbox (conical screw) | ⇒ page 121 |
| Heat shield of drive shaft to angle gearbox | ⇒ page 99 |

## 1.5 Replacing gasket rings between angle gearbox and manual gearbox (four-wheel drive)

**Special tools and workshop equipment required**

- Thrust piece -T10243-
- Thrust piece -T10298-
- Extraction hook -T20143-
- Catch pan
- Sealing grease -G 052 128 A1-

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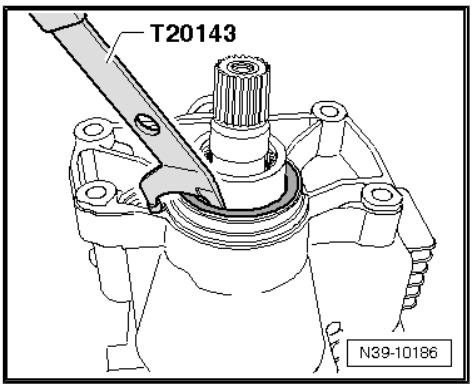
## 1.5.1 Replace gasket ring at angle gearbox

**Removing**

– Remove angle gearbox ⇒ page 101 .

– Pull out gasket ring for angle gearbox with extraction hook -T20143- .

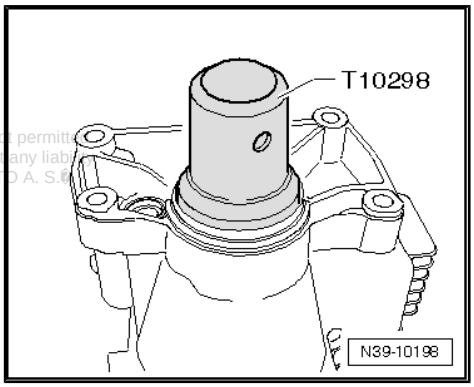



**Install**

– Lightly oil new gasket ring at outer surface.

– Fill half the space between the sealing lip and dust lip with sealing grease -G 052 128 A1- .

– Drive in the new gasket ring with thrust piece -T10298- up to the stop, do not twist the new gasket ring.




– Install angle gearbox ⇒ page 106 .

– Inspecting oil level in the angle gearbox ⇒ page 109 .

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## 1.5.2 Replace gasket ring at manual gearbox

**Removing**

– Remove angle gearbox ⇒ page 101 .

– Position the catch pan under the gearbox.

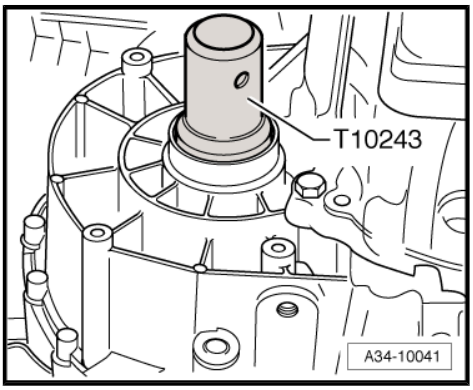
– Pull out gasket ring for manual gearbox with extraction hook -T20143- .

**Install**

– Lightly oil new gasket ring at outer surface.

– Fill half the space between the sealing lip and dust lip with sealing grease -G 052 128 A1- .

– Drive in the new gasket ring with thrust piece -T10243- up to the stop, do not twist the new gasket ring.




– Install angle gearbox ⇒ page 106 .

– Inspect the gear oil in the manual gearbox ⇒ page 100 .

## 1.6 Replacing the needle bearing (polygon bearing) and gasket ring on right flange shaft (four-wheel drive)

**Special tools and workshop equipment required**

- Pressure plate -MP3-406 (VW 401)-
- Pressure plate -MP3-407 (VW 402)-
- Pressure spindle -MP3-408 (VW 412)-
- Thrust piece -MP3-410 (VW 434) -
- Pressure spindle -MP3-423 (VW 407)-
- Assembly device -MP6-414 (3253)-
- Extractor -T10037-
- Tensioning device -T10047-
- Socket insert -T10107A-
- Catch pan

### 1.6.1 Removing

– Loosen the front right wheel bolts.

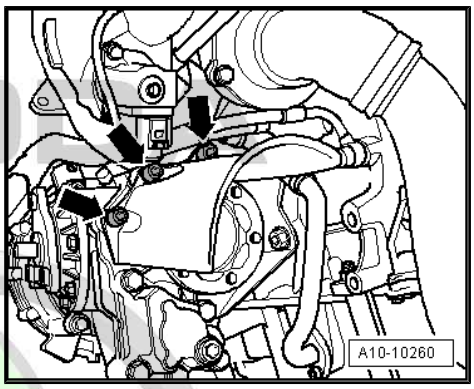
– Raise vehicle ⇒ Maintenance ; Octavia II .

– Detach the right front wheel ⇒ Chassis ⇒ Rep. Gr. 44 .

– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

– Remove the front right wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .

– If present, remove heat shield for drive shaft -arrows-.

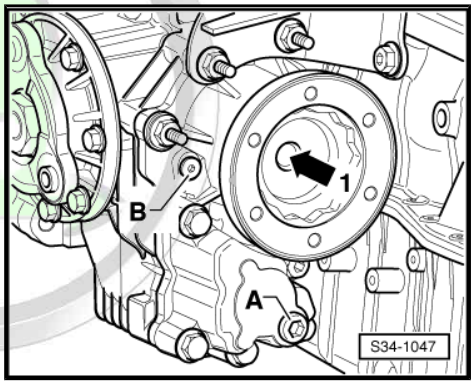



– Remove right drive shaft ⇒ Chassis ⇒ Rep. Gr. 40 .

– On vehicles with particle filter if necessary remove the bracket for the particle filter ⇒ Engine ⇒ Rep. Gr. 26 .

– Position the catch pan under the angle gearbox.

– Remove the right flange shaft bolt -arrow- using the socket insert -T10107A- .

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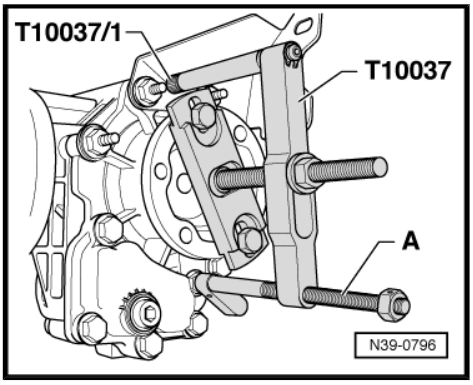
– Screw extractor -T10037- onto right flange shaft.



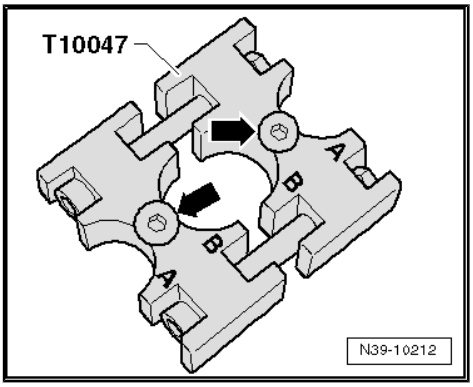

**Note**

*Use the extractor -T10037- to remove the right flange shaft so that the polygon bearings on the flange shaft are not damaged.*

– Insert the thrust piece -MP3-410- between the gearbox carrier and the knurled nut -T10037/1- .
– Align the extractor -T10037- with the support -A- parallel to the flange.
– Take out the flange shaft.

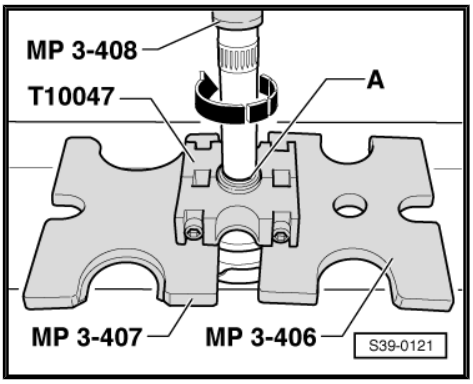
Mount tensioning device -T10047- as described further on:

– Assemble both parts of the tensioning device , so that the markings -B- point towards each other.
– The shoulders -arrows- must be under the bearing.
– Screw together both halves up to the stop.

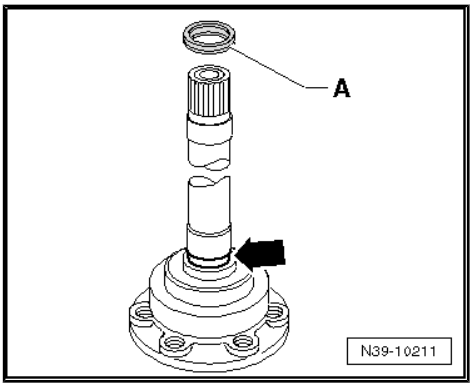



ŠKODA

– Remove circlip -A- for the needle bearing.
– In order to avoid damaging the contact surface of the needle bearing on the shaft, turn the shaft during the pressing procedure -arrow-.




– Remove gasket ring -A- from the slot -arrow-.

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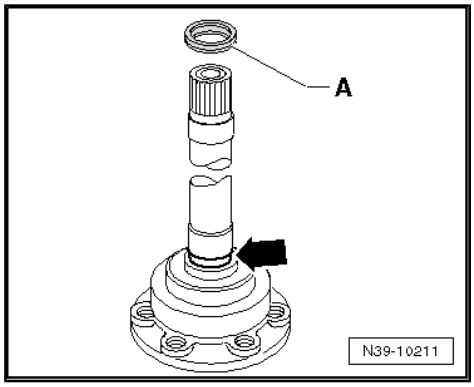
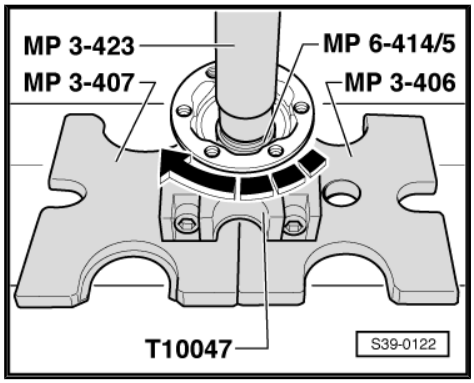
## 1.6.2 Install

– The installation occurs in reverse order, while paying attention to the following.

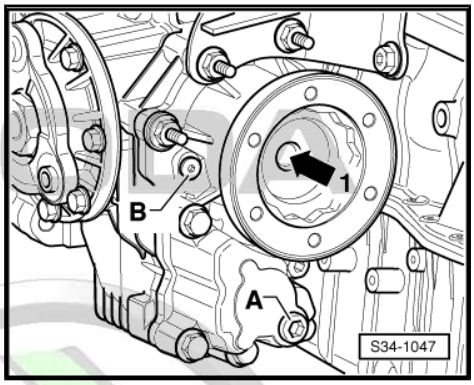
– Moisten gasket ring -2- with gear oil.
– Insert gasket ring -A- into the slot -arrow-.
– Mount tensioning device -T10047- ⇒ page 205 .



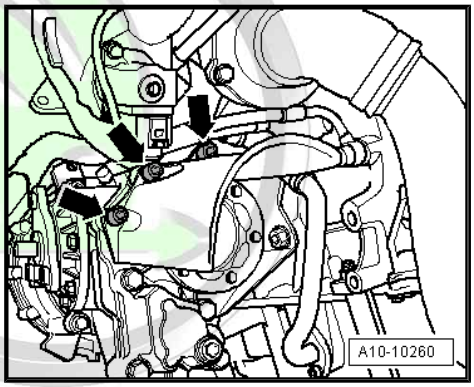

– In order to avoid damaging the contact surface of the needle bearing on the shaft, turn the shaft during the pressing procedure -arrow-.
– Secure bearing with new circlip ⇒ Electronic Catalogue of Original Parts .
– Carefully drive in flange shaft (slowly turn flange shaft).




– Tighten the screw of the flange shaft -arrow 1- with socket insert -T10107A- .
– After installing the right flange shaft, check the gear oil level in the angle gearbox ⇒ page 109 , to do so unscrew the oil filler plug -B-.
– On vehicles with particle filter install the bracket for the particle filter, if it was removed ⇒ Engine ⇒ Rep. Gr. 26 .
– Install right drive shaft ⇒ Chassis ⇒ Rep. Gr. 40 .




– Install heat shield for drive shaft -arrows-, if it was removed.
– Install the front right wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .
– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
– Attach the right front wheel ⇒ Chassis ⇒ Rep. Gr. 44 .




## Tightening torques

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| Component | Nm |
|---|---|
| Flange shaft on gearbox (conical screw) | ⇒ page 121 |
| Heat shield of drive shaft to angle gearbox | ⇒ page 99 |

## 1.7 Replacing the angle gearbox output flange gasket ring (four-wheel drive)

**Special tools and workshop equipment required**

- Pipe section -MP3-414 (VW 516)-
- Multi-purpose tool -MP3-419 (VW 771)-
- Thrust plate -MP3-467 (40-105)-
- Assembly stand -MP9-101-
- Thrust piece -T10049-
- Gearbox mount -T30097 (T10108) -
- Stop plate -T30097/1 (T10108/1)-
- Two-arm extractor , e.g. -Kukko 20/10-
- Three armed extractor e.g. -Kukko 45-2-
- Tapered-roller bearing extractor -V.A.G 1582-
- Gripper -V.A.G 1582/6-
- Catch pan
- Sealing grease -G 052 128 A1-
- Locking agent -D 000 600-

**The gasket ring for the angle gearbox output flange can only be replaced with the angle gearbox removed.**

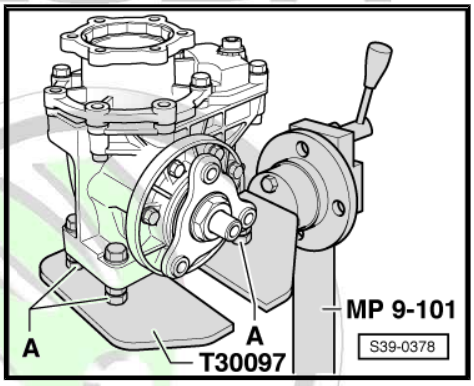
### 1.7.1 Removing

– Remove angle gearbox ⇒ page 101 .

– Screw angle gearbox on gearbox mount - T30097- .

A - Place nut M12 x 10 (8 pieces) between angle gearbox and gearbox mount -T30097- .

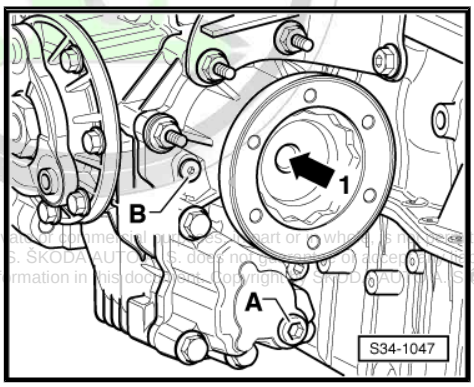
– Position the catch pan under the angle gearbox.




– Remove oil drain plug -A- from angle gearbox.

– Drain oil out of angle gearbox.

– Install oil drain plug -A- and tighten to tightening torque.

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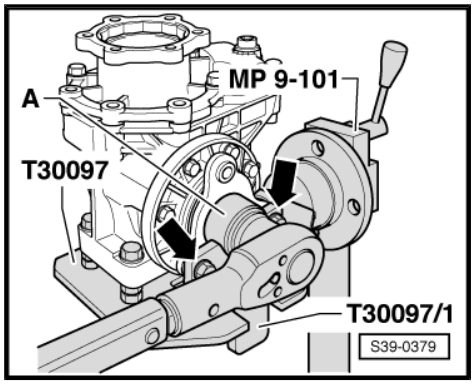
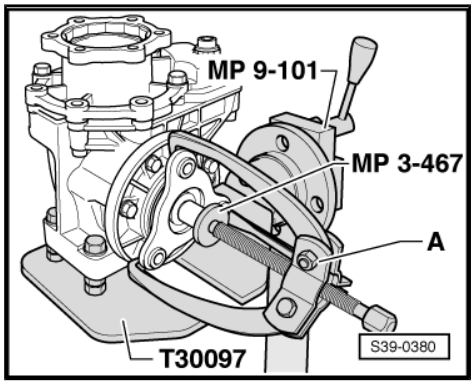
– Lock the output flange for angle gearbox with stop plate - T30097/1 (T10108/1)- and two screws M10 x 30 -arrows-.
– Unscrew nut for output flange (always replace nut ⇒ Electronic Catalogue of Original Parts ).

  A - socket wrench insert SW 36




– Detach output flange with three armed extractor -A- and thrust plate -MP3-467- .

  A - Three armed extractor e.g. -Kukko 45-2 -




**Note**

*When pulling off the output flange the inner ring/tapered-roller bearing remains on the output flange and must be removed from it.*

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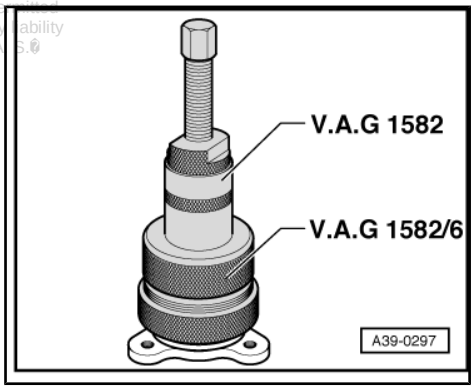
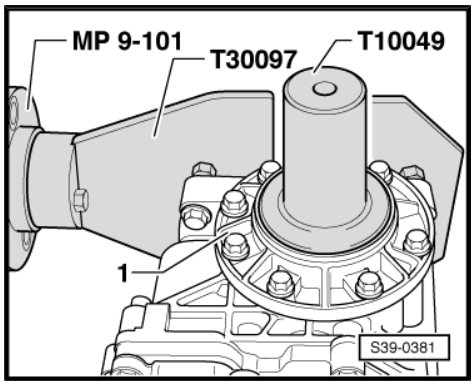
– Remove inner ring/tapered-roller bearing with tapered-roller bearing extractor -V.A.G 1582- and gripper - V.A.G 1582/6- from output flange.
– Pull out seal ring for angle gearbox output flange with Multi-purpose tool -MP3-419- .
– Clean the thread at the shank bevel gear to remove locking agent residues.



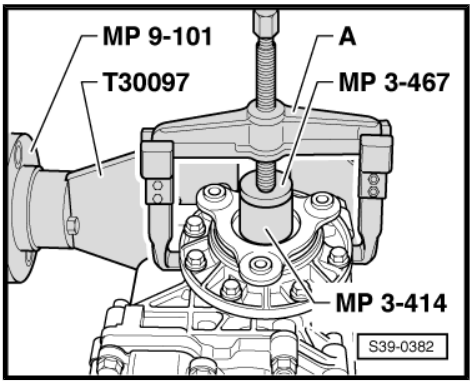

## 1.7.2 Install

– Swivel angle gearbox in such a way that the cover -1- points upwards.
– Place inner ring/tapered-roller bearing in the angle gearbox.
– Lightly oil new gasket ring at outer surface.
– Drive in the new gasket ring with thrust piece -T10049- up to the stop, do not twist the new gasket ring.
– Fill half the space between the sealing lip and dust lip with sealing grease -G 052 128 A1- .



– Insert output flange with two-arm extractor -A-, pipe section - MP3-414- and pressure plate - MP3-467- , while doing so position the pull-off hooks of the extractor on the bottom side of the housing.

  A - Two-arm extractor , e.g. -Kukko 20/10 -

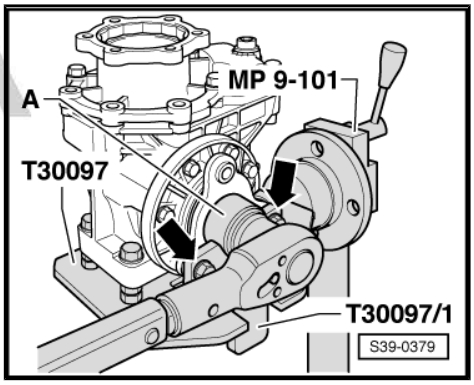



– Insert new hexagon nut with locking agent -D 000 600- and tighten to the prescribed tightening torque.

  A - socket wrench insert SW 36

– Install angle gearbox ⇒ page 106 .

– After installing, check gear oil level in the angle gearbox and top up oil ⇒ page 109 .




## Tightening torques

| Component | Nm |
|---|---|
| Oil drain plug | 60 |
| Nut for output flange[1] | 480 |

1) Always replace nut ⇒ Electronic Catalogue of Original Parts

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# 2 Setting overview

**Note**

*When working on the gearbox it is only necessary to re-set the output shaft gears 1 through 4, output shaft 5th/6th gear and reverse gear or differential gear if parts were replaced that directly affect the setting of the gearbox. To avoid unnecessary settings, refer to the following table:*

| | | Set: | | |
|---|---|---|---|---|
| | | Output shaft gears 1 through 4 ⇒ page 182 | Output shaft 5th/6th and reverse gear ⇒ page 193 | Differential gear ⇒ page 220 |
| Replaced part: | Gearbox housing | x | x | x |
| | Clutch housing | x | x | x |
| | Output shaft gears 1 through 4 | x | | |
| | Output shaft 5th/6th gear/reverse gear | | x | |
| | Differential gear housing | | | x |
| | Tapered-roller bearing for output shaft gears 1 through 4 | x | | |
| | Tapered-roller bearing for output shaft 5th/6th and reverse gear | | x | |
| | Tapered-roller bearings for differential gears. | | | x |

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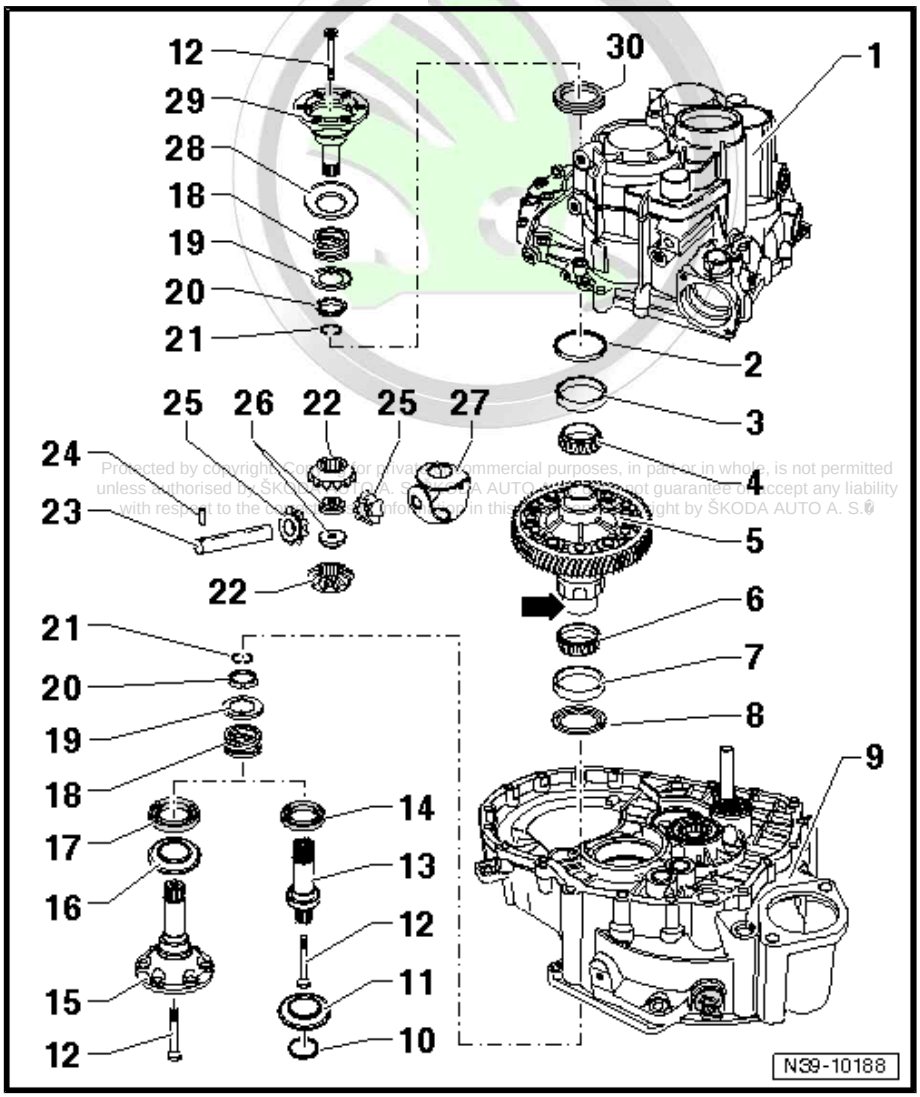
# 3 Differential gear

## 3.1 Summary of components - Front-wheel-drive

**Note**

- *Before installing heat the inner ring of the tapered-roller bearing to 100°C.*
- *Replace both tapered-roller bearings together.*
- *When replacing the tapered-roller bearings, the differential adjust the differential ⇒ page 220 .*




**1 - Gearbox housing**

**2 - Adjusting washer**

- ❑ for differential gear
- ❑ Determine thickness ⇒ page 220

**3 - Outer ring/tapered-roller bearing**

- ❑ removing ⇒ page 218
- ❑ installing ⇒ page 219

**4 - Inner ring/tapered-roller bearing**

- ❑ remove ⇒ page 217
- ❑ pressing on ⇒ page 217

**5 - Differential gear housing**

- ❑ with riveted pinion for final drive
- ❑ Support -arrow- for the right tapered-roller bearing with insert for right flange shaft approx. 28 mm longer
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

**6 - Inner ring/tapered-roller bearing**

- ❑ remove ⇒ page 217
- ❑ Gearbox with right rigid shaft: pressing on ⇒ page 218
- ❑ Gearbox with right flange shaft: pressing on ⇒ page 218

**7 - Outer ring/tapered-roller bearing**

- ❑ removing ⇒ page 216
- ❑ installing ⇒ page 217

**8 - Washer**

- ❑ Fitting position: the shoulder on the inside diameter points towards the gasket ring Pos. 14
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

**9 - Clutch housing**

**10 - O-ring**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**11 - Cap**

- ❑ can be removed from the rigid shaft pos. 13 or pressed on by hand

**12 - 33 Nm**

- ❑ screw into threaded piece Pos. 26

**13 - Rigid shaft**

- ❑ on gearboxes as of production date 01 11 4 replaced by flange shaft

**14 - Sealing ring**

- ❑ for rigid shaft up to production date 31 10 4
- ❑ replace with installed gearbox ⇒ page 198

**15 - Right flange shaft**

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts replaces as of production date 01 11 4 the rigid shaft Pos. 13

**16 - Cap**

- ❑ release with screwdriver alternatively from the flange shaft pos. 15
- ❑ push on by hand up to the stop
- ❑ must lock with the flange shaft

**17 - Sealing ring**

- ❑ for flange shaft as of production date 01 11 4 Pos.15
- ❑ replace with installed gearbox ⇒ page 199
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

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**18 - Pressure spring for flange or rigid shaft**

- ❑ rear flange or rigid shaft fitted

**19 - Thrust washer**

- ❑ Fitting position: Collar to pressure spring, leg (if present) to conical ring

**20 - Conical ring**

- ❑ with slots (if present) for thrust washer catch
- ❑ Fitting position: Cone towards differential gear housing

**21 - Circlip**

- ❑ holds the conical ring, stop disc and pressure spring in position when the flange shaft or rigid shaft is removed

**22 - large differential bevel gear**

- ❑ installing ⇒ page 220

**23 - Differential bevel gear shaft**

- ❑ drive out with drift
- ❑ installing ⇒ page 220

**24 - Tensioning sleeve**

- ❑ to secure the differential bevel gear shaft
- ❑ removing and installing ⇒ page 219

**25 - small differential bevel gear**

- ❑ installing ⇒ page 220

**26 - Threaded part**

- ❑ installing ⇒ page 220

**27 - Stop disc compound**

- ❑ when installing moisten with gearbox oil

**28 - Cap**

- ❑ release with screwdriver alternatively from the flange shaft pos. 29
- ❑ Fitting position: Recess points away from the threaded holes in the flange shaft
- ❑ push on by hand up to the stop
- ❑ must lock with the flange shaft

**29 - Flange shaft**

**30 - Sealing ring**

- ❑ for flange shaft
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ replace with installed gearbox ⇒ page 197

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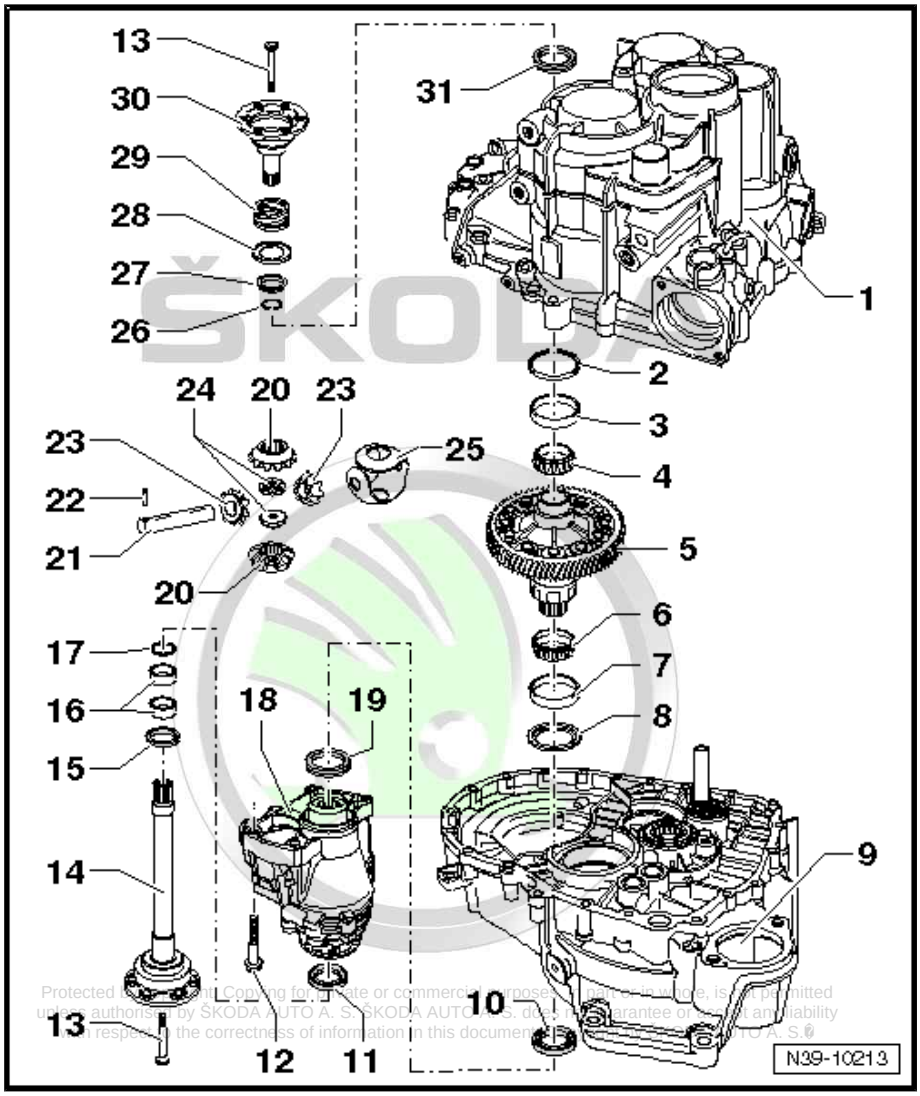
## 3.2 Summary of components - Four-wheel drive

**Note**

- *Before installing heat the inner ring of the tapered-roller bearing to 100°C.*
- *Replace both tapered-roller bearings together.*
- *When replacing the tapered-roller bearings, the differential gear housing, the gearbox housing or the clutch housing, adjust the differential ⇒ page 220 .*




**1 - Gearbox housing**

**2 - Adjusting washer**

- ❑ for differential gear
- ❑ Determine thickness ⇒ page 220

**3 - Outer ring/tapered-roller bearing**

- ❑ removing ⇒ page 218
- ❑ installing ⇒ page 219

**4 - Inner ring/tapered-roller bearing**

- ❑ remove ⇒ page 217
- ❑ pressing on ⇒ page 217

**5 - Differential gear housing**

- ❑ with riveted pinion for final drive

**6 - Inner ring/tapered-roller bearing**

- ❑ remove ⇒ page 217
- ❑ pressing on ⇒ page 218

**7 - Outer ring/tapered-roller bearing**

- ❑ removing ⇒ page 216
- ❑ installing ⇒ page 217

**8 - Washer**

- ❑ Fitting position: the shoulder on the inside diameter points towards the angular gearbox Pos. 18

**9 - Clutch housing**

**10 - Sealing ring**

- ❑ between manual gearbox and angle gearbox
- ❑ replace ⇒ page 202
- ❑ pull out using ejection lever -MP3-418- or ejection lever -T20143/2-
- ❑ on disassembled gearbox it can be driven in with pressure plate -T40007 - up to the stop

**11 - Sealing ring**

- ❑ for right flange shaft
- ❑ diameter of left and right differ

- ❑ replace with installed manual gearbox with angle gearbox ⇒ page 200

**12 - 40 Nm + torque a further 90°**

- ❑ 4 pieces
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**13 - 33 Nm**

- ❑ screw into threaded piece Pos. 24

**14 - Right flange shaft**

- ❑ removing and installing ⇒ page 200

**15 - Sealing ring**

- ❑ to replace, remove the needle bearings (polygon bearing ) pos. 16

**16 - Needle bearing (polygon bearing)**

- ❑ replace ⇒ page 204

**17 - Circlip**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**18 - Angle gearbox**

- ❑ Removing and installing with gearbox fitted ⇒ page 101
- ❑ Removing and installing with gearbox removed ⇒ page 123

**19 - Sealing ring**

- ❑ between angle gearbox and manual gearbox
- ❑ replacing with angle gearbox removed ⇒ page 203

**20 - large differential bevel gear**

- ❑ installing ⇒ page 220

**21 - Differential bevel gear shaft**

- ❑ removing ⇒ page 219
- ❑ installing ⇒ page 220

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**22 - Tensioning sleeve**

- ❑ to secure the differential bevel gear shaft
- ❑ removing ⇒ page 219
- ❑ drive in the new tensioning sleeve ⇒ page 219 flush

**23 - small differential bevel gear**

- ❑ installing ⇒ page 220

**24 - Threaded part**

- ❑ installing ⇒ page 220

**25 - Stop disc compound**

- ❑ insert with gear oil

**26 - Circlip**

- ❑ holds the conical ring, stop disc and pressure spring in position when the flange shaft is removed

**27 - Conical ring**

- ❑ with slots (if present) for thrust washer catch
- ❑ Fitting position: Cone towards differential gear housing

**28 - Thrust washer**

- ❑ Fitting position: Collar to pressure spring, leg (if present) to conical ring

**29 - Pressure spring for left flange shaft**

- ❑ fitted behind left flange shaft

**30 - Flange shaft left**

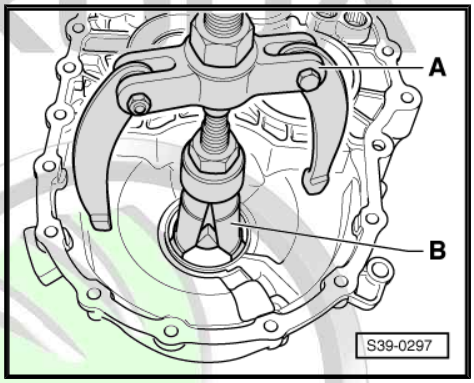
**31 - Sealing ring**

- ❑ for left flange shaft
- ❑ diameter of left and right differ
- ❑ replace with installed gearbox ⇒ page 197

## 3.3 Disassembling and assembling differential gear

**Special tools and workshop equipment required**

- ♦ Pressure plate -MP3-407 (VW 402)-
- ♦ Pressure spindle -MP3-408 (VW 412)-
- ♦ Pressure spindle -MP3-448 (VW 408A)-
- ♦ Pipe section -MP3-450 (VW 415A)-
- ♦ Pipe section -MP3-451 (VW 422)-
- ♦ Thrust piece -MP3-459 (VW 473)-
- ♦ Thrust plate -MP3-467 (40-105)-
- ♦ Assembly device -MP5-402 (3301)-
- ♦ Pressure spindle -MP6-405 (VW 411)-
- ♦ Pipe -MP6-419 (3259)-
- ♦ Pipe -T30019 (3345)-
- ♦ Thrust plate -T30045 (3005)-
- ♦ Pipe -T30055 (3296)-
- ♦ Separating device 12...75 mm , e.g. - Kukko 17/1-
- ♦ Extractor , e.g. -Kukko 18/1-
- ♦ Interior extractor 46...58 mm e.g. -Kukko 21/7-
- ♦ Countersupport e.g. -Kukko 22/2-
- ♦ Extractor , e.g. -Kukko 204/2-

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**Remove outer ring/tapered-roller bearing from clutch housing**

A - Countersupport , e.g. -Kukko 22/2-

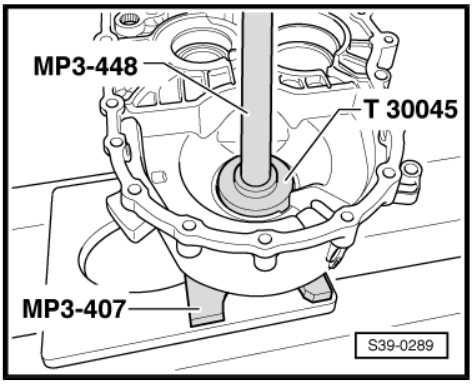
B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-

**Note**

- ♦ *Tighten the interior extractor -B- between the outer ring/tapered-roller bearing and the washer.*
- ♦ *After pulling out the washer check for damage, if necessary replace.*

### Press outer ring/tapered-roller bearing into the clutch housing

– First insert the washer.




**Note**

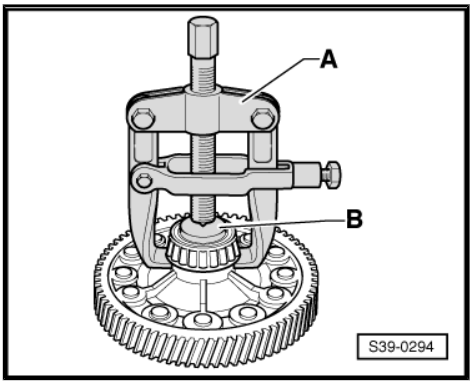
*Pay attention to the fitting position of the washer, the shoulder on the inside diameter points towards the gasket ring in the clutch housing.*

### Removing inner ring/tapered-roller bearing

A - Extractor , e.g. -Kukko 204/2-

B - Thrust plate -MP3-467 (40-105)-

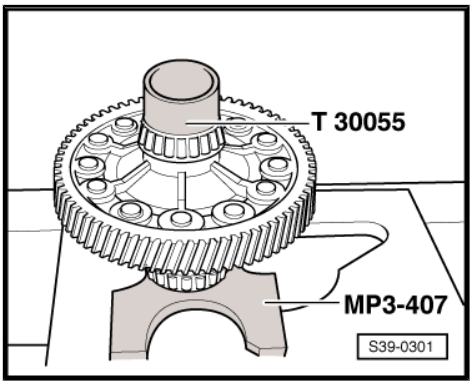
– Tighten the extractor -A- in the area of the flattened sides of the differential gear housing below the inner ring.




**Note**

*When pulling off the inner ring make sure the hooks do not bend outwards, if necessary tighten screw.*

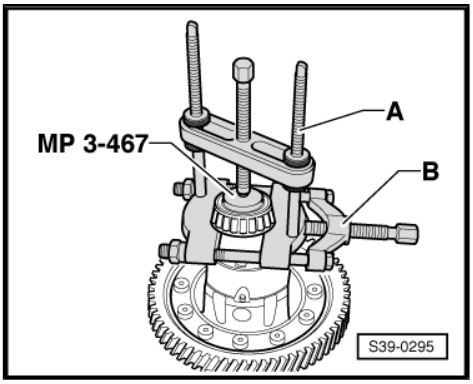
### Press on inner ring/tapered-roller bearing




### Removing inner ring/tapered-roller bearing

A - Extractor , e.g. -Kukko 18/1-

B - Separating device 12...75 mm , e.g. -Kukko 17/1-

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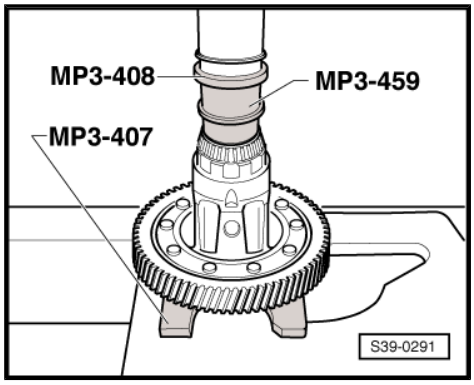
### Gearbox with right rigid shaft: Press on inner ring/tapered-roller bearing

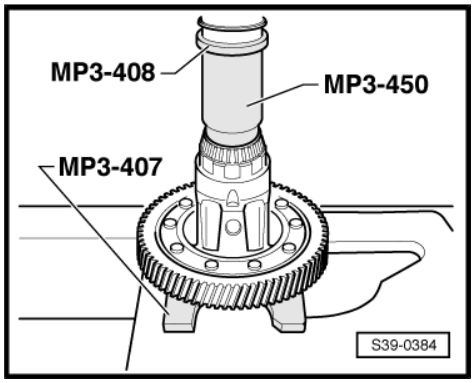
– Place pressure plate -MP3-459- with small external diameter onto the inner ring/tapered-roller bearing.

It must be possible to rotate the cage with the taper rollers freely when pressing on.



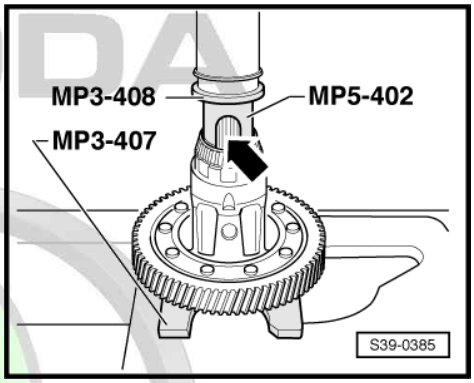

### Gearbox with right flange shaft: Press on inner ring/tapered-roller bearing

It must be possible to rotate the cage with the taper rollers freely when pressing on.




### Four-wheel drive: Press on inner ring/tapered-roller bearing

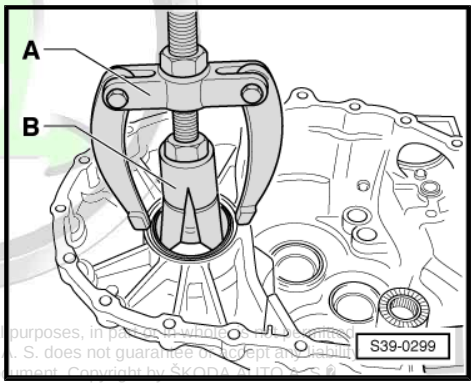
– Place sleeve from the assembly device -MP5-402- with the opening -arrow- (large internal diameter) onto the inner ring/ tapered-roller bearing.




### Remove outer ring/tapered-roller bearing from gearbox housing

A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-

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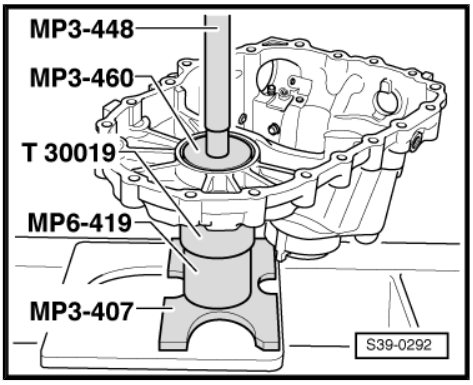
### Press in outer ring/tapered-roller bearing in the gearbox housing

– Support the gearbox housing with a pipe -T30019- directly below the bearing support.

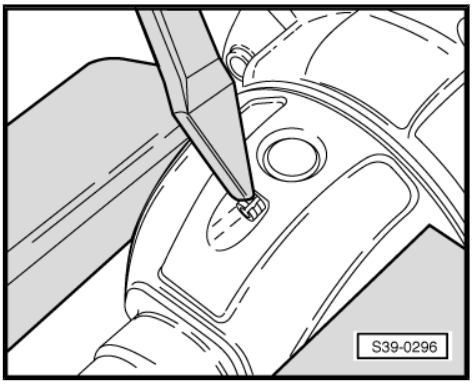



### Remove and install the tensioning sleeve for differential bevel gear shaft

#### Removing

– Cover inner ring/tapered-roller bearing to avoid any possible damage and swarf.

– Drive out tensioning sleeve with a chisel, position the chisel in the circular slot.




#### Install

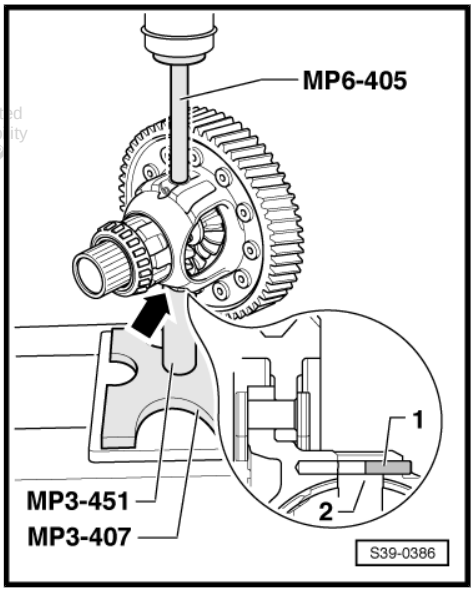
– Drive into the differential gear housing up to the stop.

### Four-wheel drive: Remove differential bevel gear shaft and tensioning sleeve for differential bevel gear shaft

– First drive in the tensioning sleeve -1- into the differential bevel gear shaft -2- flush.

– Then position the differential with the tensioning sleeve -arrow- pointing towards the pipe section -MP3-451- under the press.

– Then press out the differential bevel gear shaft.

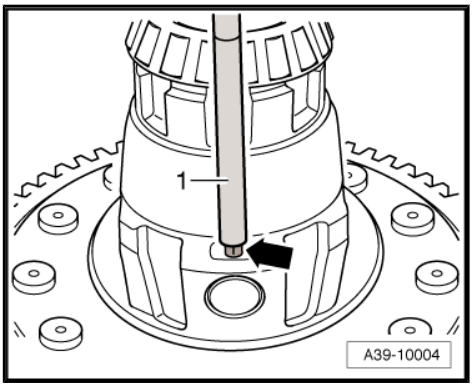



**Note**

*If necessary remove the cut parts of the tensioning sleeve from the differential gear housing.*

### Four-wheel drive: Install tensioning sleeve

– Drive in the new tensioning sleeve -arrow- flush to the differential gear housing using a drift -1-.

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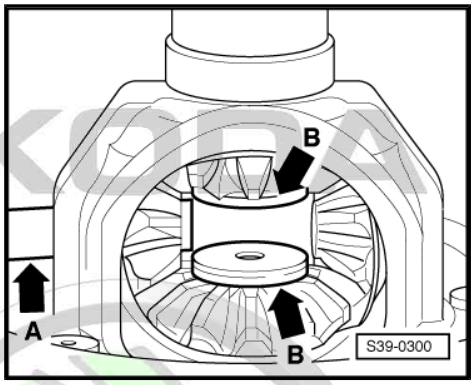
**Install differential bevel gears**




– Install stop disc compound with gearbox oil.
– Insert both large differential bevel gears and secure (e.g. with flange shaft).
– Insert and swivel both small differential bevel gears into position with a 180° offset.
– Push in the differential bevel gear shaft -arrow A- up to the first small differential bevel gear.
– Insert the threaded parts -arrows B- in the large differential bevel gears.

Fitting position: Heel towards the large differential bevel gears

– Drive in the differential bevel gear shaft up to end position and secure with tensioning sleeve.

## 3.4 Adjusting the differential gear

**Special tools and workshop equipment required**

- Gauge block plate -MP3-405/17 (VW 385/17)-
- Pressure plate -MP3-407 (VW 402)-
- Universal dial gauge holder -MP3-447 (VW 387)-
- Pressure spindle -MP3-448 (VW 408A)-
- Pipe -MP6-419 (3259)-
- Pipe -T30019 (3345)-
- Thrust plate -T30045 (3005)-
- Interior extractor 46...58 mm e.g. -Kukko 21/7-
- Countersupport e.g. -Kukko 22/2-

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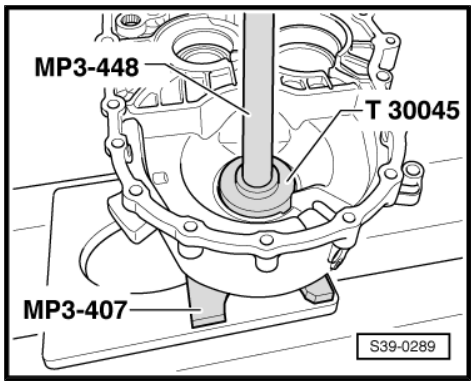
The differential gear must be re-set when the following components are replaced:

- Gearbox housing
- Clutch housing
- Differential gear housing
- Tapered-roller bearings of the differential gear

Setting overview ⇒ page 210 .

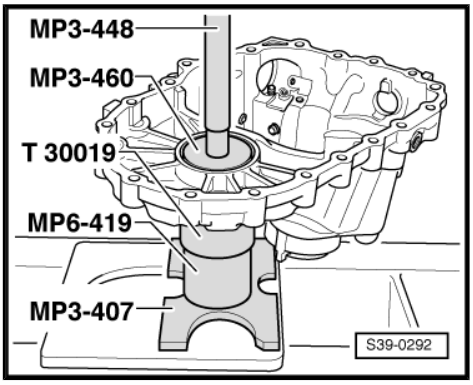
– Press the outer ring/tapered-roller bearing with washer in the clutch housing.




**Note**

*Pay attention to the fitting position of the washer, the shoulder on the inside diameter points towards the gasket ring in the clutch housing.*

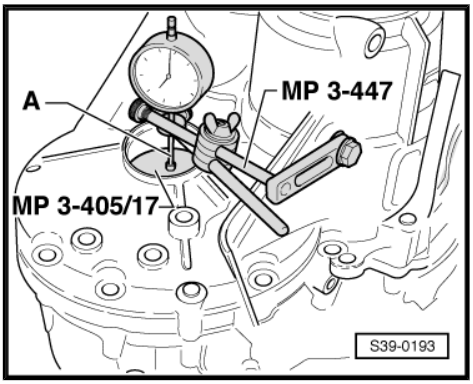
– Press outer ring/tapered-roller bearing without adjusting washer into the gearbox housing.
– Insert the differential gear in the clutch housing.
– Position the gearbox housing and tighten 5 screws to the given tightening torque ⇒ page 117 .
– Press differential gear towards the clutch housing while simultaneously turning eight times.
– Press differential gear towards the gearbox housing while simultaneously turning eight times.




– Set the dial gauge to 0 with 1 mm preload on “0”.

A - Dial gauge extension 30 mm

– Move the differential gear up and down, read off and write down the clearance on the dial gauge (example: 0.70 mm).




## 3.4.1 Determine the adjusting washer

The prescribed bearing preload is reached by adding to the established measured value a constant compression value (0,25 mm).

**Example:**

| | |
|---|---|
| measured value | 0.70 mm |
| + compression (constant value) | 0.25 mm |
| = Thickness of the adjusting washer | 0.95 mm |

– Remove the gearbox housing.

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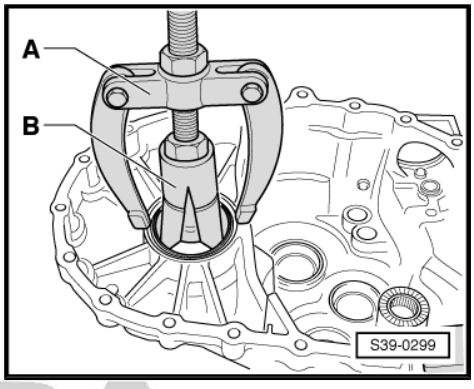
– Remove outer ring/tapered-roller bearing from gearbox housing.




A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-

– Insert an adjusting washer of the correct thickness.

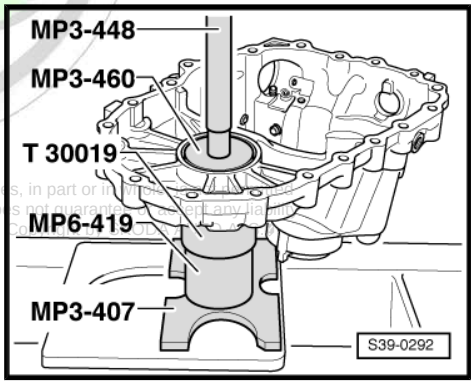
The following adjusting washers are available:

| Thickness (mm) | Part number |
|---|---|
| 0,65 | 02B 409 210 |
| 0,70 | 02B 409 210 A |
| 0,75 | 02B 409 210 B |
| 0,80 | 02B 409 210 C |
| 0,85 | 02B 409 210 D |
| 0,90 | 02B 409 210 E |
| 0,95 | 02B 409 210 F |
| 1,00 | 02B 409 210 G |
| 1,05 | 02B 409 210 H |
| 1,10 | 02B 409 210 J |
| 1,15 | 02B 409 210 K |
| 1,20 | 02B 409 210 L |
| 1,25 | 02B 409 210 M |

If the measured washer thickness is greater than the one listed in the table, 2 washers corresponding to the measured value may be fitted. First insert the thicker adjusting washer.

Different tolerances allow to select the required thickness for each washer very precisely.

– Press outer ring in again and tighten the gearbox housing with tightening torque ⇒ page 117 .

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# 4 Removing and installing propshaft

## 4.1 Removing and installing “two-piece” propshaft

**Special tools and workshop equipment required**

- Engine and gearbox jack e.g. -V.A.G 1383A -

**Note**

- *The two-piece propshaft is installed until 27.05.07. The front propshaft pipe can be separated from rear propshaft pipe.*
- *Work on the propshaft should be carried out on a two-pillar lift platform.*
- *Before the removal, mark the position of all parts to each other. Carry out the installation again in the same position, otherwise the imbalance is too great, damages to the bearing and humming noises could occur.*
- *Do not bend the propshaft, only store extended and transport.*

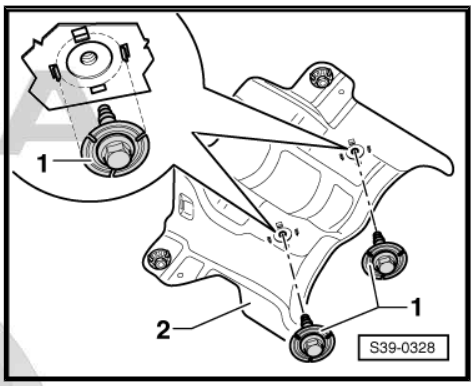
### 4.1.1 Removing

– Removing the whole exhaust gas system ⇒ Engine ⇒ Rep. Gr. 26 .

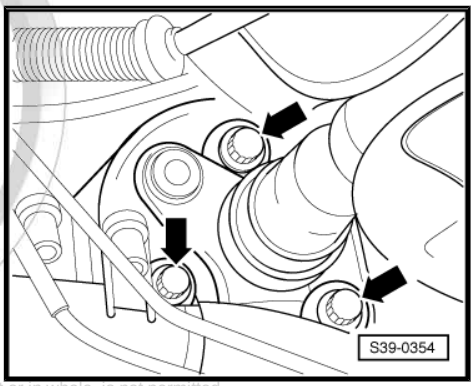
– Support propshaft with engine and gearbox jack e.g. -V.A.G 1383A- (as an aid, e.g. use a wooden wedge)

– Remove heat shield -2-, to do so release the screws -1-.

– After removing the heat shield screw on again by hand the intermediate bearing of the propshaft with the screws -1-.




– Unscrew propshaft from angle gearbox -arrows-.

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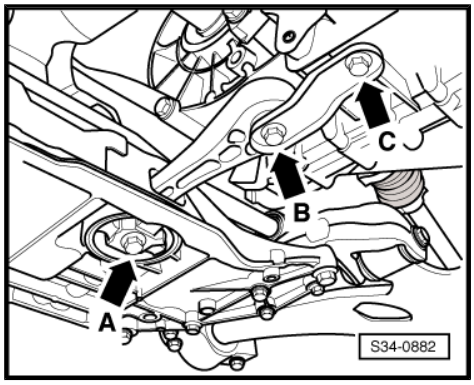
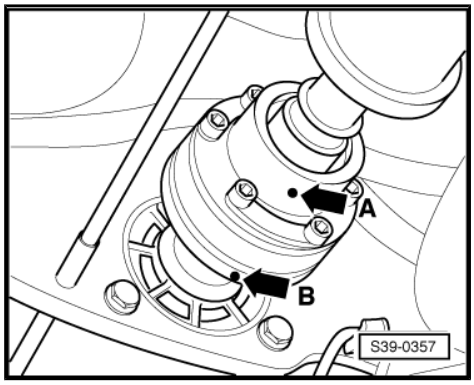
– Remove pendulum support from gearbox, to do so release the bolts -arrow B- and -arrow C-.



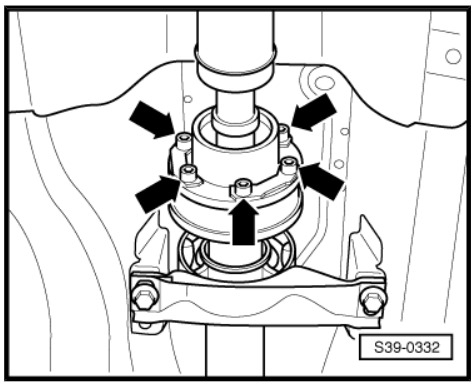

**Note**

*After unscrewing the fixing screws for the pendulum support at the gearbox, the engine/gearbox unit swivels slightly towards the front (direction front). Make sure that the gasket ring in the flange of the propshaft is not damaged.*

– Check, if the markings of the CV joint/propshaft -arrows A and B- are present. If not, mark them with colours.




– Flange off the front propshaft pipe from the rear propshaft pipe -arrows-.
– Push the front propshaft pipe to the front and swivel out the flange of the rear propshaft pipe.




**Note**

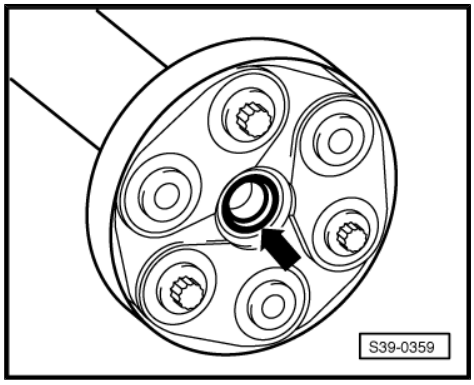
*When swivelling out make sure that the front propshaft pipe is inclined as little as possible to the bottom.*

– Carefully pull off the front propshaft pipe from the centering stud.

**Note**

*The gasket ring -arrow- in the flange of the propshaft must not be damaged.*

– Pull off propshaft horizontally from centering stud.
– Swivel down the front propshaft pipe and remove.

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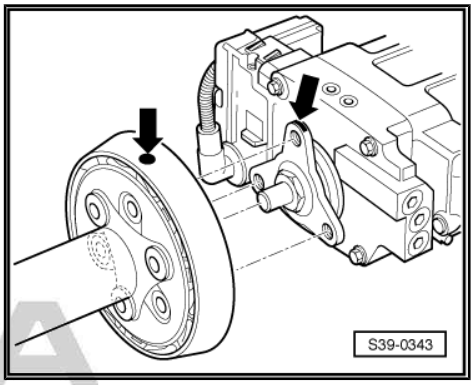
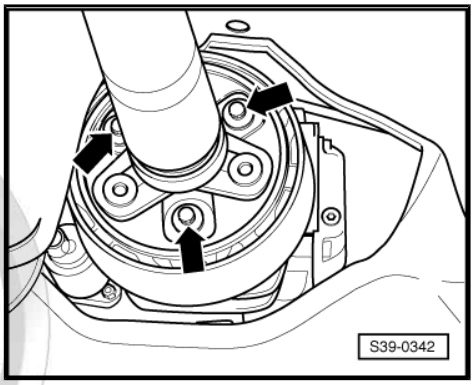
– Check, if a marking (colour point) is present on the flexible disk/oscillation damper and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.




– Unscrew rear propshaft pipe with flexible disk and oscillation damper from rear final drive -arrows-.
– Unscrew intermediate bearing of propshaft from the vehicle.
– Carefully pull off the rear propshaft pipe from the centering stud.




**Note**

- *Do not tilt propshaft when removing, pull off horizontally from the centering stud.*
- *The gasket ring in the centering bush -arrow- must not be damaged.*

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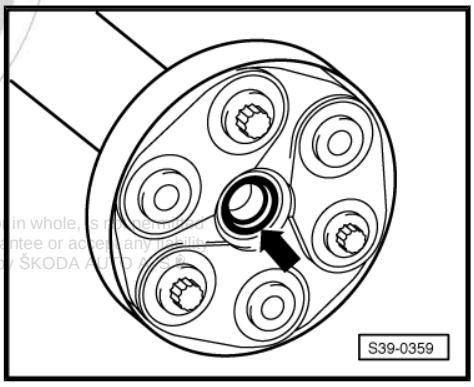
The flexible disk and oscillation damper cannot be separated.




## 4.1.2 Install

Installation is performed in the reverse order, pay attention to the following points:

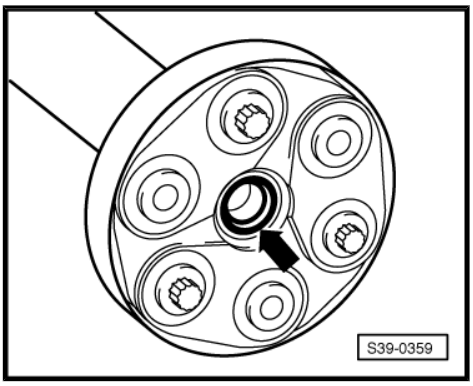
When re-installing, fit all parts of the propshaft marked to each other in the same position.

The gasket rings -arrow- in the flanges of the propshaft must not be damaged when removing and installing. In case of damaged gasket rings the propshaft must be replaced.

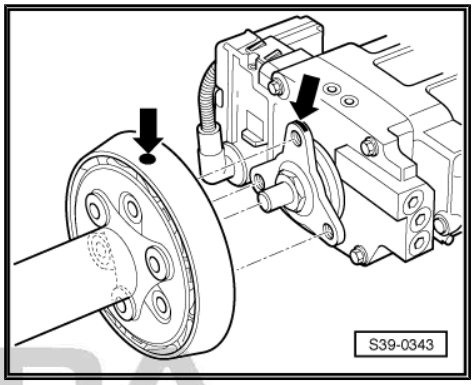
– Push propshaft horizontally onto the respective centering studs.

**Fitting position:**

Three protruding bushings at the angle gearbox flange or the Haldex coupling flange and propshaft flange grip into the location holes of the flexible disks.

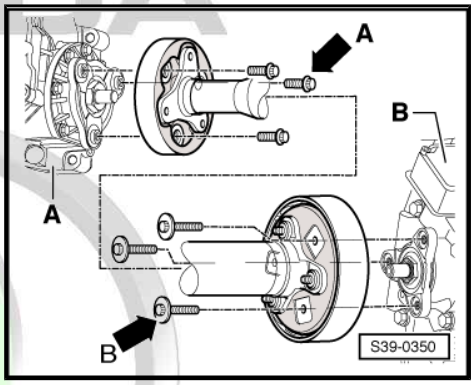


– Install the propshaft on the flange of the Haldex coupling and on the flange of the angle gearbox in such a way that the markings -arrows- are on the same line.




**Observe fitting location of the different collar screws.**

| Collar screw with | Fitting location |
|---|---|
| small collar -arrow A- | Propshaft on front final drive -A- |
| large collar -arrow B- | Propshaft on rear final drive -B- |




– Align intermediate bearing in its elongated holes in such a way that the propshaft or the intermediate bearing is not under tension.

– Only screw down intermediate bearing after tightening the propshaft.

When screwing the heat shield -2- with the intermediate bearing make sure that the screws -1- are within the four centering tabs.

– Align the exhaust system, without tightening ⇒ Engine ⇒ Rep. Gr. 26 .

– Install pendulum support at the gearbox ⇒ Chassis ⇒ Rep. Gr. 40 .

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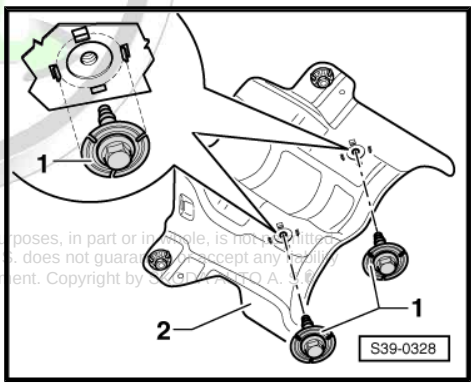
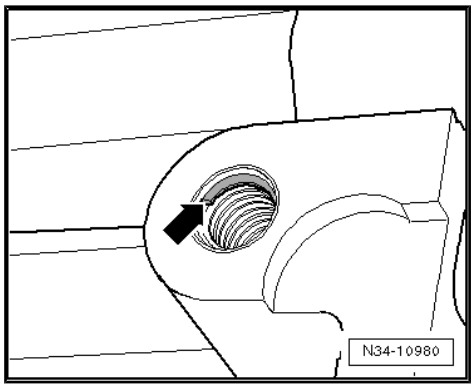



**Note**

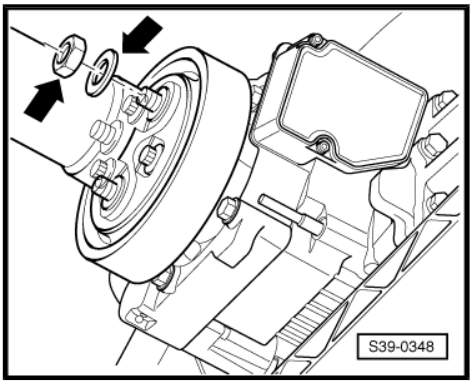
- *As of production date 28 05 7 threaded inserts are located in the bolt-holes for the pendulum support (e.g. “Heli-Coil”).*
- *Distinguishing feature: Shoulder at first thread turn -arrow-.*
- *Please observe the corresponding fixing screws and the tightening torque for the pendulum support ⇒ Chassis ⇒ Rep. Gr. 40 .*




– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

**Note**

- *If droning noises occur while driving, the following must be observed.*
- *Remove balancing nut and balancing washer -arrows-.*
- *Afterwards unscrew if necessary the propshaft with the flexible disk from the flange of the Haldex coupling and screw on again offset to a hole.*
- *If the droning noises can still be heard, the propshaft must be screwed on once again offset to a hole.*




**Tightening torques**

| Component | Nm |
|---|---|
| Intermediate bearing to body | ⇒ page 233 |
| Front to rear propshaft pipe | ⇒ page 233 |
| Flexible disk to rear final drive | ⇒ page 233 |
| Flexible disks to propshaft[1] | ⇒ page 233 |
| Flexible disk to angle gearbox | ⇒ page 233 |

1) Always replace screws ⇒ Electronic Catalogue of Original Parts .

## 4.2 Removing and installing “one-piece” propshaft

**Special tools and workshop equipment required**

- Engine and gearbox jack e.g. -V.A.G 1383A -

**Note**

- *The “one-piece” propshaft is installed as of 28.05.07. The front propshaft pipe cannot be separated from rear propshaft pipe.*
- *Work on the propshaft should be carried out on a two-pillar lift platform.*
- *Before the removal, mark the position of all parts to each other. Carry out the installation again in the same position, otherwise the imbalance is too great, damages to the bearing and humming noises could occur.*
- *Flexible disks to propshaft and corresponding fixing screws are not supplied as spare parts. Thus in case of damage, the entire propshaft must be replaced ⇒ Electronic Catalogue of Original Parts .*
- *Do not bend the propshaft, only store extended and transport.*
- *When removing, do not let the propshaft “hang”, always support it.*
- *Always remove the propshaft horizontally from the centering stud or push on.*

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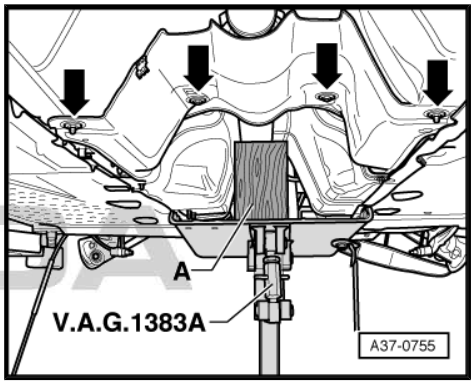
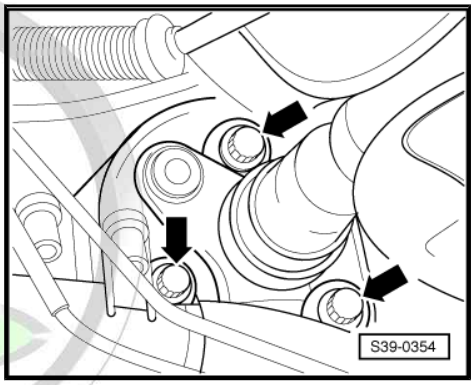
### 4.2.1 Remove propshaft

– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

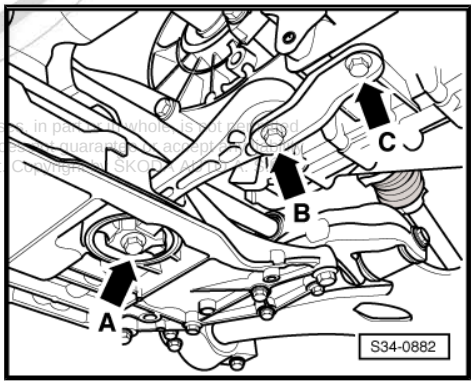
– Removing the whole exhaust gas system ⇒ Engine ⇒ Rep. Gr. 26 .
– Remove the heat protection plate below the propshaft -arrows-.
– Place a suitable wooden wedge -A- onto the gearbox mount and support the “rear” propshaft pipe.
– Secure the propshaft against falling down with a belt.
– Mark the position of the propshaft with flexible disk to the output flange of the angle gearbox.




– Unscrew propshaft from angle gearbox -arrows-.




– Remove pendulum support from gearbox, to do so release the bolts -arrow B- and -arrow C-.

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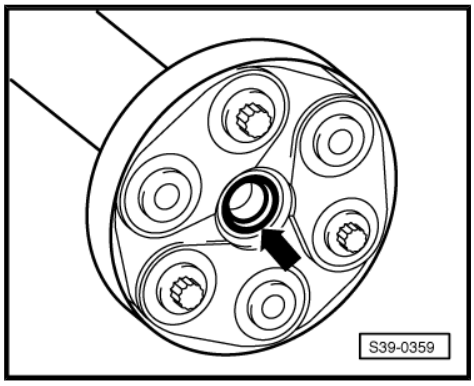
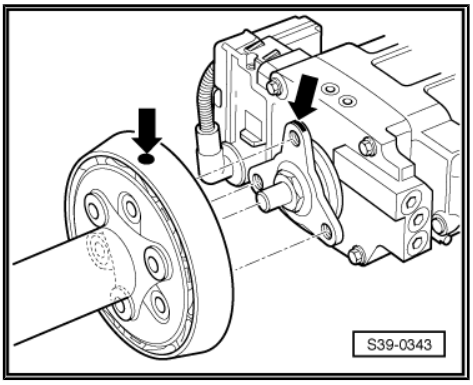
**Note**

*After unscrewing the fixing screws for the pendulum support at the gearbox, the engine/gearbox unit swivels slightly towards the front (direction front). Make sure that the gasket ring in the flange of the propshaft is not damaged.*

**Vehicles with rear final drive “02D/0AV”**



– Check, if a marking (colour point) is present on the flexible disk/oscillation damper and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.




– Unscrew propshaft with flexible disk and oscillation damper from rear final drive -arrows-.

**Vehicles with rear final drive “0BR”**

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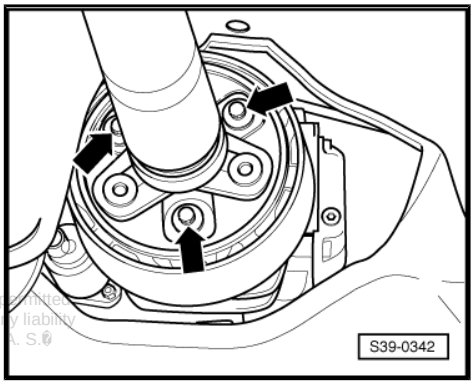
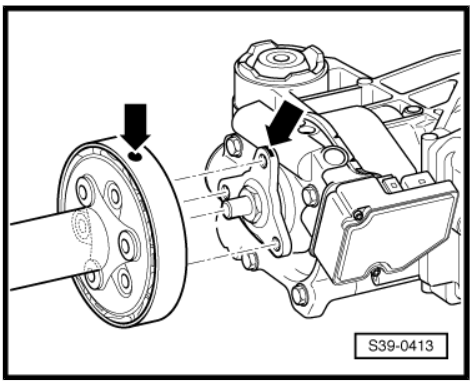


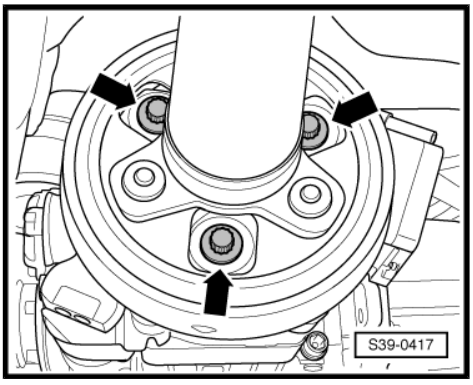

– Check, if a marking (colour point) is present on the flexible disk/oscillation damper and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.



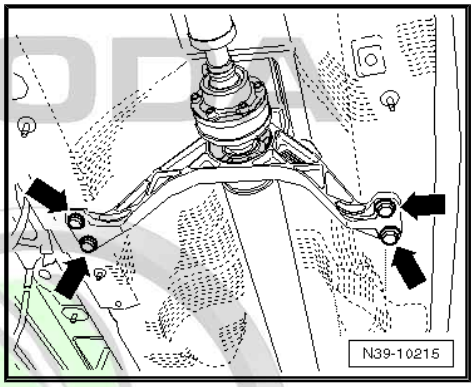

– Unscrew propshaft with flexible disk and oscillation damper from rear final drive -arrows-.

**Continued for all vehicles**

For further removal, secure the propshaft in the front area with a 2nd mechanic.

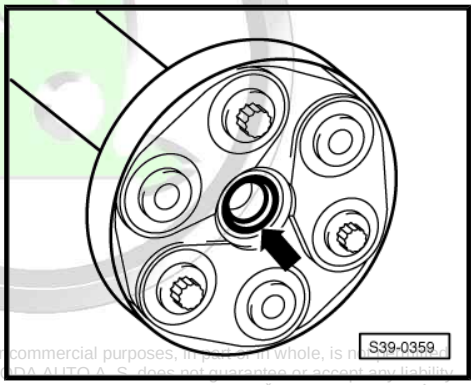


– Unscrew intermediate bearing of propshaft from the vehicle -arrows-.
– Then guide the propshaft towards the front (direction front). While doing so, if necessary slightly press the engine/gearbox assembly forwards.
– Afterwards pull off the propshaft from the centering stud at the rear final drive.
– Then pull off the propshaft from centering stud of the angular gearbox.




**Note**

- *Do not tilt propshaft when removing, detach horizontally from centering stud of angular gearbox and from centering stud of rear final drive. Gasket ring/centering bushing -arrow- must not be damaged, otherwise the propshaft has to be replaced.*
- *Do not bend the propshaft, only store extended and transport.*

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## 4.2.2 Install

Installation is performed in the reverse order, pay attention to the following points:

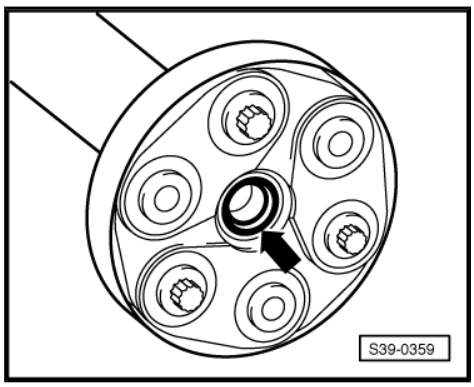
When re-installing, fit all parts of the propshaft marked to each other in the same position.

The gasket rings -arrow- in the flanges of the propshaft must not be damaged when removing and installing. In case of damaged gasket rings the propshaft must be replaced.

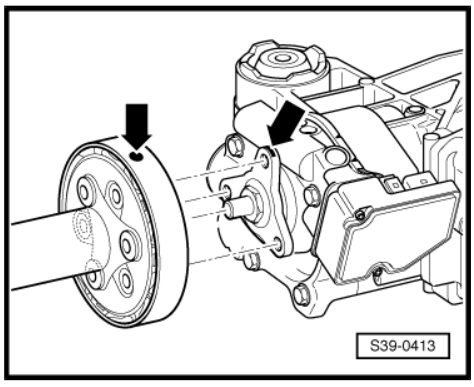
– Push propshaft horizontally onto the respective centering studs.

**Fitting position:**

Three protruding bushings at the angle gearbox flange or the Haldex coupling flange and propshaft flange grip into the location holes of the flexible disks.

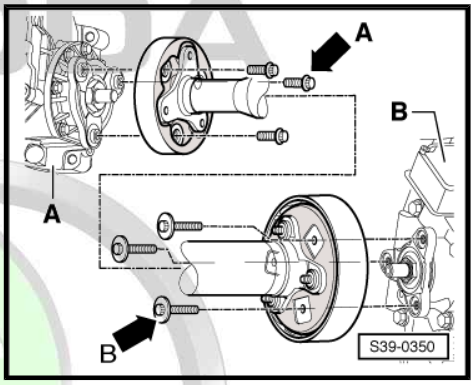



– Install the propshaft on the flange of the Haldex coupling and on the flange of the angle gearbox in such a way that the markings -arrows- are on the same line.

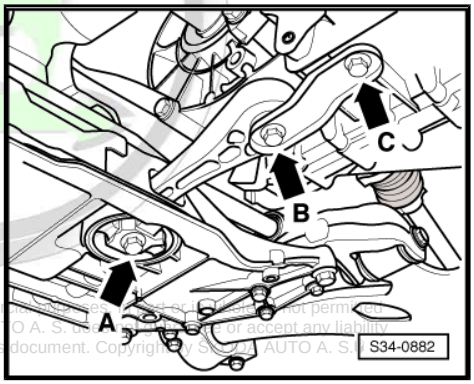


**Observe fitting location of the different collar screws.**

| Collar screw with | Fitting location |
|---|---|
| small collar -arrow A- (M10 x 30) | Propshaft on front final drive -A- |
| large collar -arrow B- (M10 x 45) | Propshaft on rear final drive -B- |




– Screw the pendulum support with new screws -arrow B- and -arrow C- onto the gearbox ⇒ Engine ⇒ Rep. Gr. 10 .

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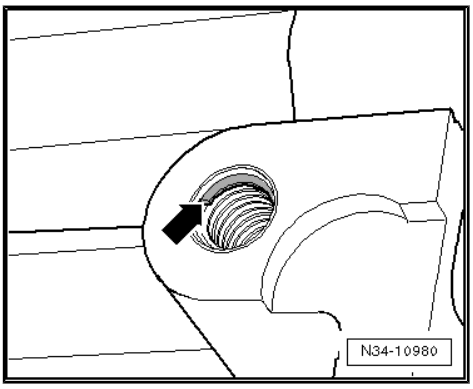
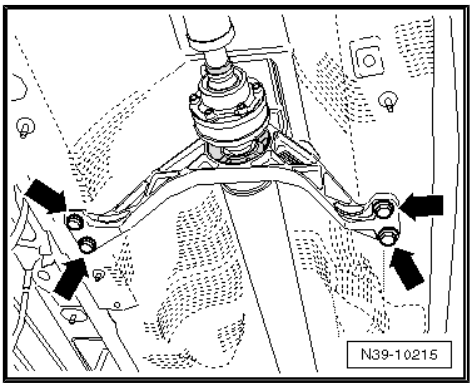
**Note**

- *As of production date 28 05 7 threaded inserts are located in the bolt-holes for the pendulum support (e.g. “Heli-Coil”).*
- *Distinguishing feature: Shoulder at first thread turn -arrow-.*
- *Pay attention to the corresponding fixing screws and the tightening torque for the pendulum support ⇒ Engine ⇒ Rep. Gr. 10 .*




– Align intermediate bearing in its elongated holes in such a way that the propshaft or the middle bearing is not under tension.
– Only screw down intermediate bearing after tightening the propshaft -arrows-.
– Install the heat shield below the propshaft.
– Install exhaust system and align free of stress ⇒ Engine ⇒ Rep. Gr. 26 .
– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .




**Note**

- *If droning noises occur while driving, the following must be observed.*
- *Unscrew the propshaft with the flexible disk from the flange of the Haldex coupling and screw on again offset to a hole.*
- *If the droning noises can still be heard, the propshaft must be screwed on once again offset to a hole.*

### Tightening torques

| Component | Nm |
|---|---|
| Intermediate bearing to body | ⇒ page 238 |
| Propshaft to rear final drive | ⇒ page 238 |
| Propshaft to angle gearbox | ⇒ page 238 |

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# 5 Repairing propshaft

## 5.1 Repairing “two-piece” propshaft

**Special tools and workshop equipment required**

- Drive bushing -MP3-402 (VW 244B)-
- Pressure plate -MP3-406 (VW 401)-
- Pressure plate -MP3-407 (VW 402)-
- Assembly device for drive shaft -MP3-422 (VW 391)-
- Pressure spindle -MP3-448 (VW 408A)-
- Strutting bushing -MP6-428 (VW 522)-
- Clamping device -MP6-429 (40-204A)-
- Separating device 12...75 mm , e.g. -Kukko 17/1-
- Extractor , e.g. -Kukko 18/0 -
- Hose binding claw

**Note**

- *The two-piece propshaft is installed until 27.05.07. The front propshaft pipe pos. 5 can be separated from rear propshaft pipe pos. 19.*
- *During the manufacture, the entire propshaft is balanced, in order to obtain the smoothest running possible. The balancing of the entire propshaft or the individual propshaft pipes is not possible with workshop tools. It is therefore essential to always replace the entire propshaft in case of damage to the front or the rear propshaft pipe.*
- *Do not bend the propshaft, only store extended and transport.*
- *Before the removal, mark the position of all parts to each other. Carry out the installation again in the same position, otherwise the imbalance is too great, damages to the bearing and humming noises could occur.*

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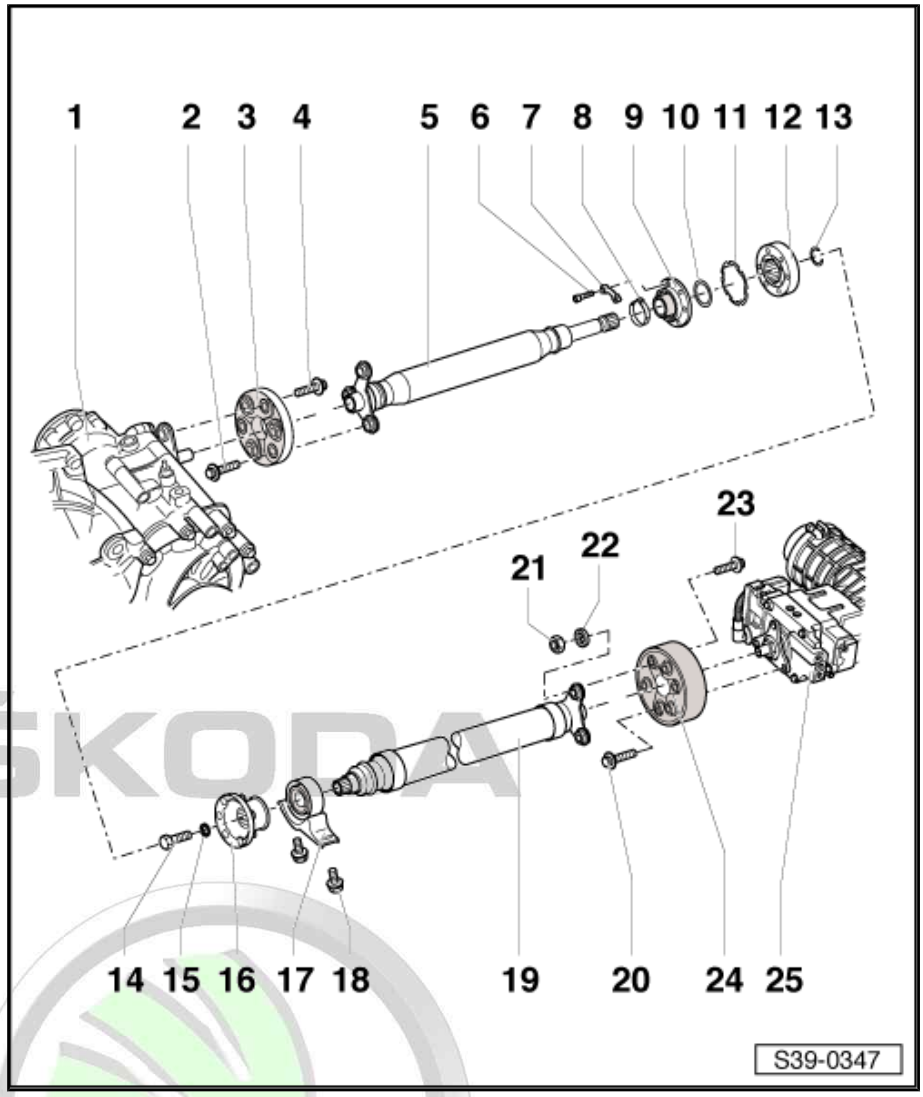


**1 - Angle gearbox**

**2 - 50 Nm + torque a further 90°**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**3 - Flexible disk with heat shield**

- ❑ Fitting position: The open side of the heat shield faces towards the gearbox

**4 - 60 Nm**

- ❑ Assignment ⇒ page 237

**5 - Front propshaft pipe**

- ❑ When installing and removing do not damage the centering bushing and gasket ring in the middle of the flange

**6 - 40 Nm**

**7 - Shim**

**8 - Open warm-type clamp**

- ❑ tensioning ⇒ page 236

**9 - Joint boot for CV joint**

- ❑ drive out with drift pin before pressing off the CV joint
- ❑ check for damage

**10 - Disc spring**

- ❑ interlocked at inside diameter
- ❑ Fitting position: large diameter lies on the CV joint

**11 - Gasket**

- ❑ always replace (pull off protective foil and stick in joint) ⇒ Electronic Catalogue of Original Parts

**12 - CV joint**

- ❑ pressing off ⇒ page 235
- ❑ pressing on ⇒ page 235
- ❑ Grease filling: Push 25 g grease on each side (total 50 g) into the joint. Grease joint if necessary, when replacing the joint boot.

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**13 - Circlip**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing with circlip pliers

**14 - 45 Nm**

**15 - Washer**

- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**16 - Flange**

- ❑ remove ⇒ page 236
- ❑ installing ⇒ page 236

**17 - Intermediate bearing**

- ❑ remove ⇒ page 236

- ❑ Fitting position ⇒ page 237
- ❑ drive in ⇒ page 237

**18 - 25 Nm**

- ❑ attaches additionally the heat shield

**19 - Rear propshaft pipe**

- ❑ When installing and removing do not damage the centering bushing and gasket ring in the middle of the flange

**20 - 60 Nm**

- ❑ Assignment ⇒ page 237

**21 - Balancing nut**

- ❑ not fitted to all propshafts
- ❑ if the collar screw Pos. 23 was detached, the balancing nut and the balancing washer Pos. 22 must not be installed again

**22 - Balancing washer**

- ❑ not fitted to all propshafts
- ❑ if the collar screw Pos. 23 was detached, the balancing nut Pos. 21 and the balancing washer must not be installed again

**23 - 50 Nm + torque a further 90°**

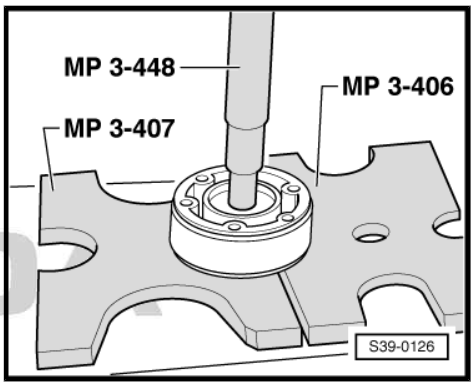
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**24 - Flexible disk with oscillation damper**

- ❑ Fitting position ⇒ page 237

**25 - Rear final drive**

**Pressing off CV joint**

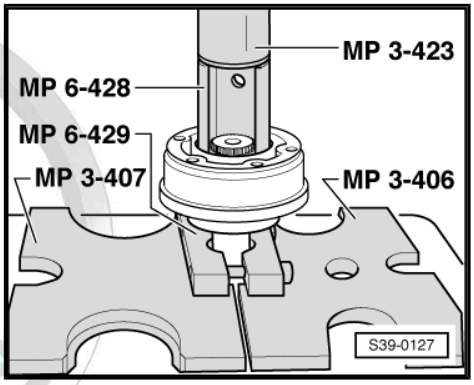



**Pressing on CV joint**

– Carefully pressing on.

– Tighten tensioner -MP6-429- , propshaft must not be pressed down in the tensioner -MP6-429- , otherwise this could result in paint damage.

– If necessary eliminate paint damage as follows: Remove grease residues with Nitro-diluent -L 001 600- . Apply 2-component acrylic paint -ALN 769 041- with hardener -ALZ 009 001- .

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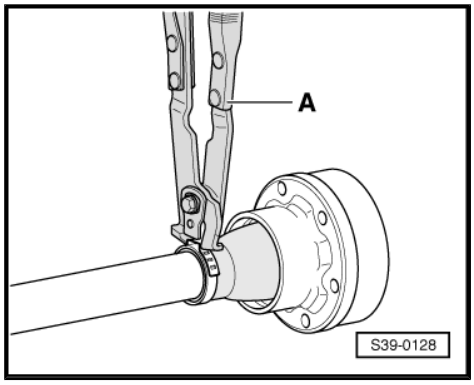
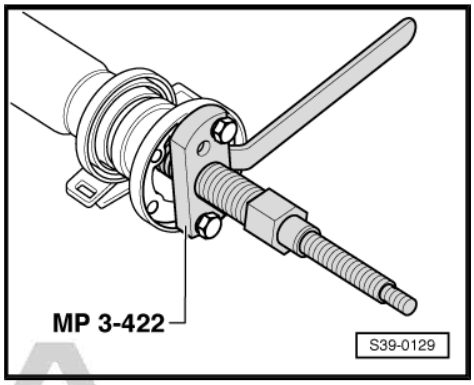
### Tighten warm-type clamp

-A- Hose binding claw

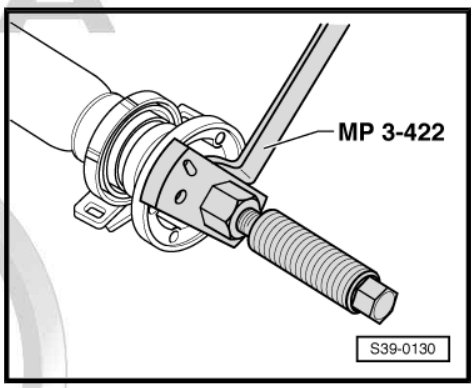
In case of repair assign the warm-type clamp via ⇒ Electronic catalogue of original parts .




### Remove the flange




### Install the flange

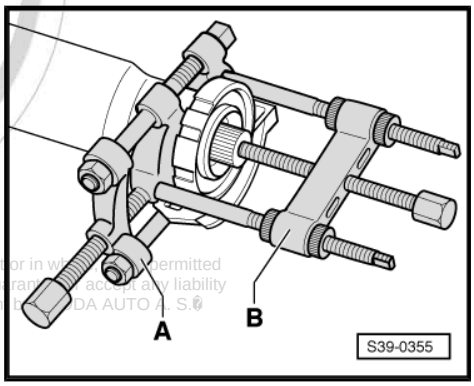



### Remove the intermediate bearing

– The rubber guide of the intermediate bearing must be cut through and the sheet covering must be removed.

-A- Separating device 12...75 mm e.g. -Kukko 17/1-

-B- extractor e.g. -Kukko 18/0-

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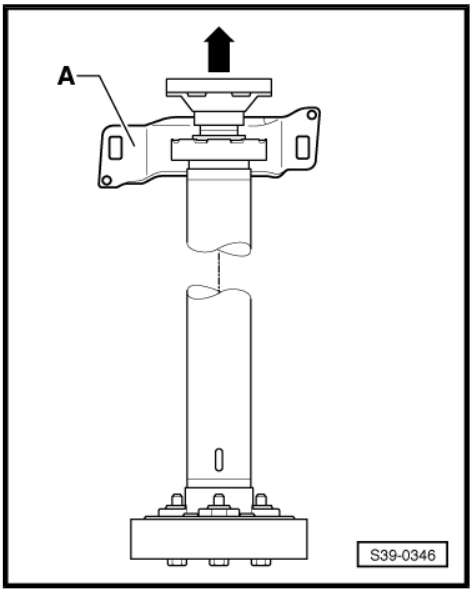
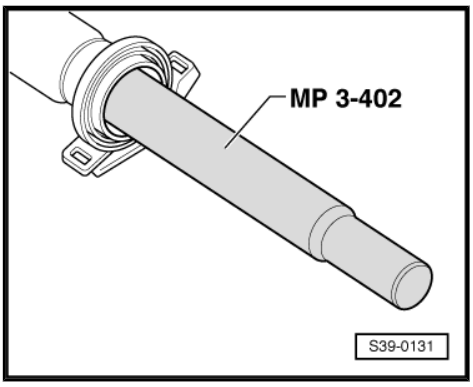
### Fitting position of the intermediate bearing

The longest land -A- points in direction of travel -arrow- to the left.



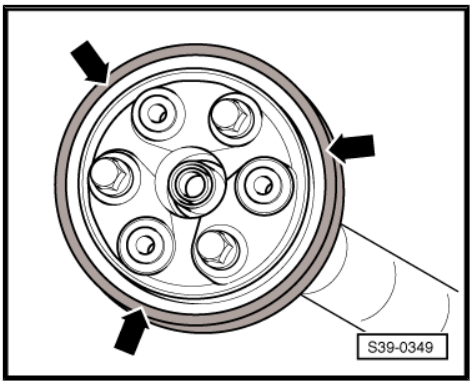

### Drive in intermediate bearing

Drive in intermediate bearing up to the stop.



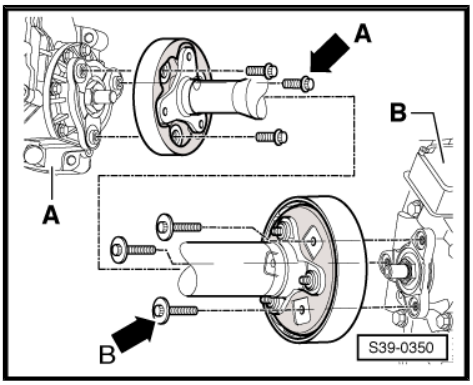

### Fitting position of flexible disk with oscillation damper

The land on the outside diameter -arrows- points away from the propshaft pipe.




### Observe fitting location of the different collar screws

| Collar screw with | Fitting location |
|---|---|
| small collar -arrow A- | Propshaft on front final drive -A- |
| large collar -arrow B- | Propshaft on rear final drive -B- |

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## 5.2 Repairing “one-piece” propshaft

**Note**

- *The “one-piece” propshaft is installed as of 28.05.07. The front propshaft pipe cannot be separated from rear propshaft pipe.*
- *During the manufacture, the entire propshaft is balanced, in order to obtain the smoothest running possible. The balancing of the entire propshaft is not possible with workshop tools. Thus in case of damage, the entire propshaft must be replaced ⇒ Electronic Catalogue of Original Parts .*
- *Do not bend the propshaft, only store extended and transport.*
- *Before the removal, mark the position of all parts to each other. Carry out the installation again in the same position, otherwise the imbalance is too great, damages to the bearing and humming noises could occur.*
- *Flexible disks to propshaft and corresponding fixing screws are not supplied as spare parts. Thus in case of damage, the entire propshaft must be replaced ⇒ Electronic Catalogue of Original Parts .*

**1 - Angle gearbox**

**2 - 60 Nm**

- ❑ 3 pieces
- ❑ M10 x 30
- ❑ Assignment ⇒ page 239

**3 - Propshaft**

- ❑ removing and installing ⇒ page 223
- ❑ When installing and removing do not damage the centering bushing and gasket ring in the middle of the flange
- ❑ Fitting position: the intermediate bearing Pos. 5 is located in the direction of travel behind the monoblock joint -arrow-

**4 - 60 Nm**

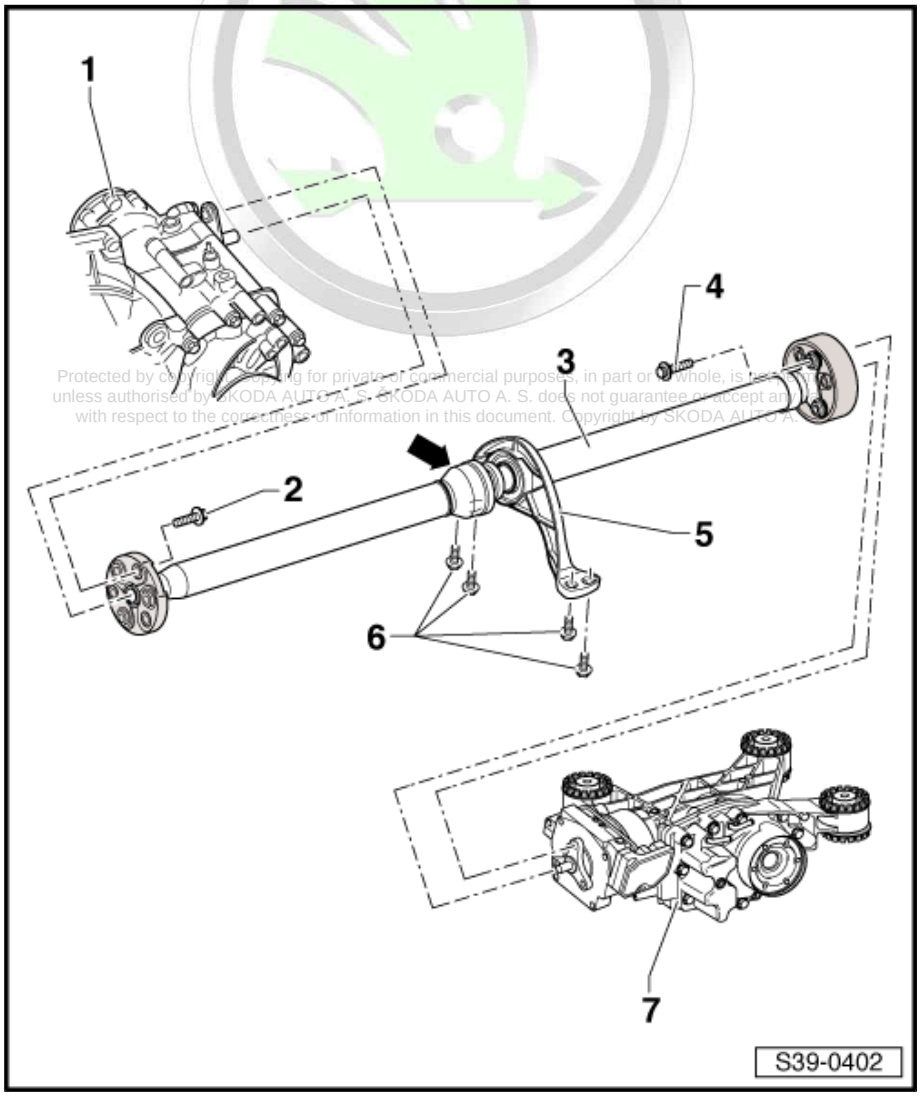
- ❑ 3 pieces
- ❑ M10 x 45
- ❑ Assignment ⇒ page 239

**5 - Intermediate bearing**

- ❑ align free of stress
- ❑ replace propshaft if damaged

**6 - 25 Nm**

**7 - Rear final drive**

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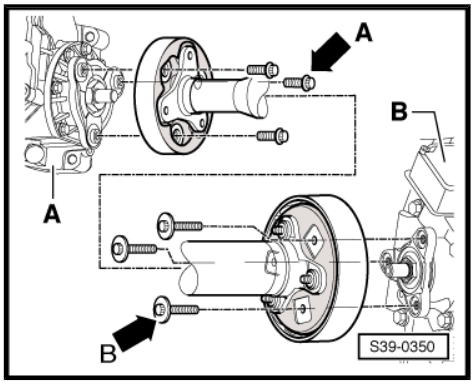
**Observe fitting location of the different collar screws**

| Collar screw with | Fitting location |
|---|---|
| small collar -arrow A- (M10 x 30) | Propshaft on front final drive -A- |
| large collar -arrow B- (M10 x 45) | Propshaft on rear final drive -B- |

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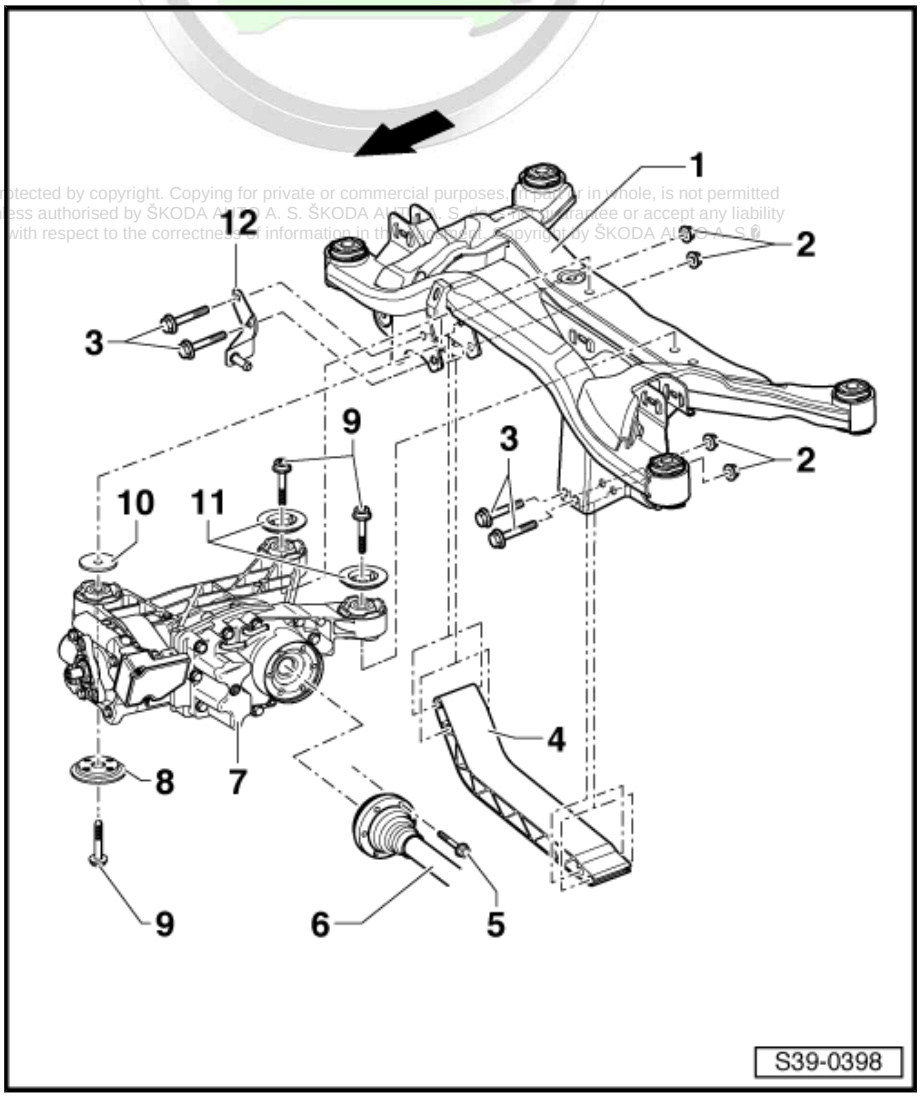
# 6 Removing and installing the rear final drive

## 6.1 Summary of components - Removing and installing the rear final drive “02D/ 0AV”

**Note**

*-Arrow- points in direction of travel.*




**1 - Rear assembly carrier**

**2 - Nut**

- 4 pieces
- Tightening torque ⇒ Chassis ⇒ Rep. Gr. 42
- Assignment ⇒ Electronic Catalogue of Original Parts

**3 - Screw**

- 4 pieces
- for cross member Pos.4 at assembly carrier Pos. 1
- Assignment ⇒ Electronic Catalogue of Original Parts

**4 - Cross member**

- no longer applicable for steel assembly carrier
- Assignment ⇒ Electronic Catalogue of Original Parts

**5 - Screw**

- Tightening torque ⇒ Chassis ⇒ Rep. Gr. 42
- for drive shaft to rear final drive

**6 - Drive shaft**

- removing and installing ⇒ Chassis ⇒ Rep. Gr. 42

**7 - Rear final drive**

- removing and installing ⇒ page 242
- Replace the rubber-metal bearing ⇒ page 253

**8 - Stop washer**

- mount onto the rubber-metal bearing ⇒ page 241

**9 - Screw**

- 3 pieces
- Tightening torque ⇒ Chassis ⇒ Rep. Gr. 42
- Assignment ⇒ Electronic Catalogue of Original Parts

**10 - Washer**

- ❑ installed between final drive and assembly carrier
- ❑ Fitting position: Chamfer (smaller ∅) points towards the assembly carrier

**11 - Stop washer**

- ❑ mount onto the rubber-metal bearing ⇒ page 241

**12 - Support**

**Fitting position of the rubber-metal bearings “rear top” and “front bottom”. Fitting of the stop washer -B-**

- Final drive in fitting position

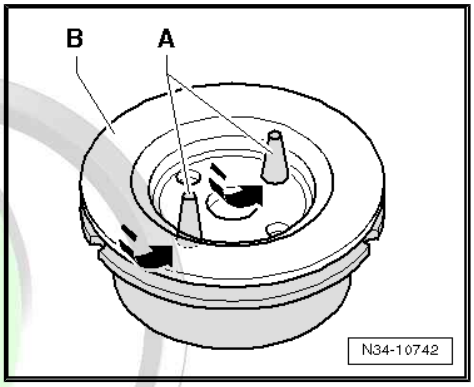
**Fitting position of the rubber-metal bearings “rear top” and “front bottom”:**

- ♦ The rubber-metal bearings “rear top” point with the stud -A- to the top
- ♦ The rubber-metal bearing “front bottom” points with the stud -A- to the bottom

**Fitting of the stop washer -B-**

– Pull the studs -A- into the holes of the stop washer -arrows-.

The stop washer -B- is then connected captively with the rubber-metal bearing.

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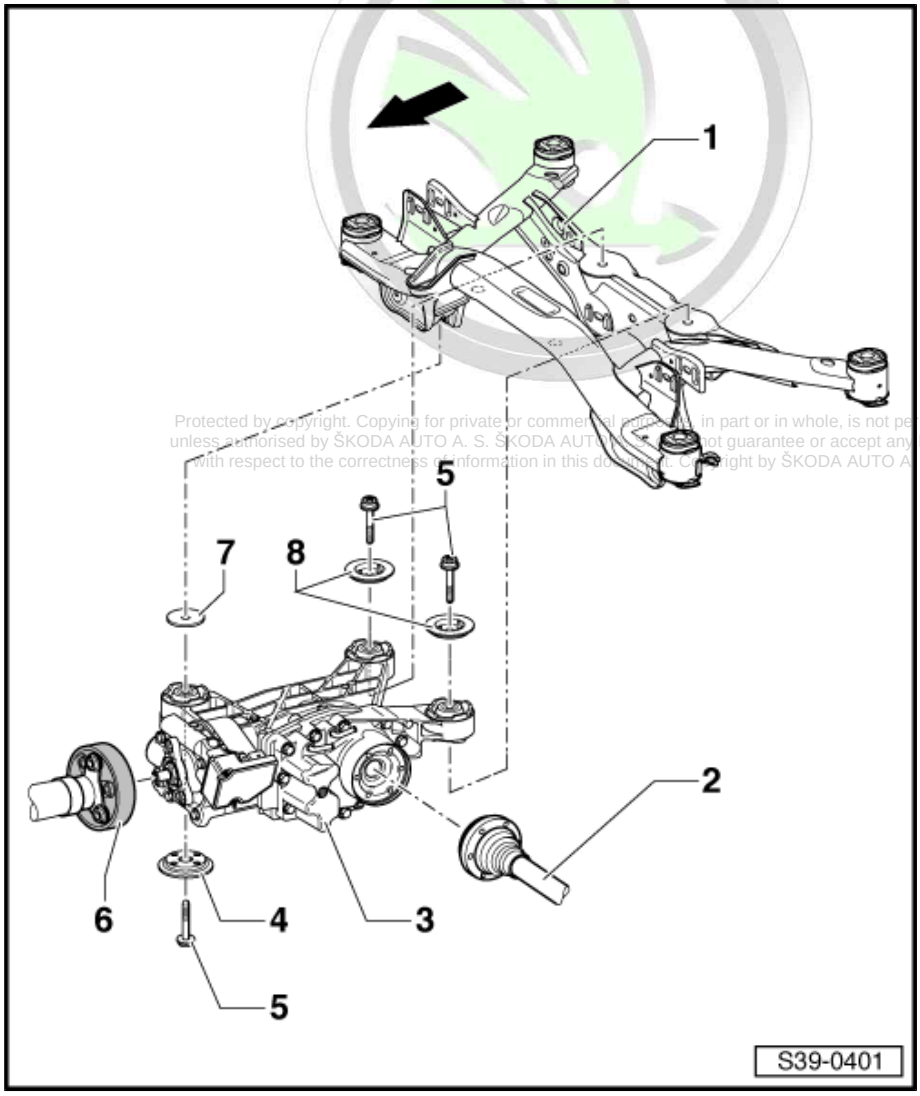
## 6.2 Summary of components - Removing and installing the rear final drive “0BR”

**Note**

*The -arrow- shows the direction of travel.*




**1 - Rear assembly carrier**

**2 - Drive shaft**

- ❑ removing and installing ⇒ Chassis ⇒ Rep. Gr. 42

**3 - Rear final drive**

- ❑ removing and installing ⇒ page 246
- ❑ Replace the rubber-metal bearing ⇒ page 253

**4 - Stop washer**

- ❑ install on rubber-metal bearing ⇒ page 241

**5 - Screw**

- ❑ 3 pieces
- ❑ Tightening torque ⇒ Chassis ⇒ Rep. Gr. 42
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

**6 - Propshaft**

- ❑ removing and installing ⇒ page 223

**7 - Washer**

- ❑ installed between final drive and assembly carrier
- ❑ on certain vehicles 2 washers can also be present
- ❑ install the same number of washers as removed

**8 - Stop washer**

- ❑ install on rubber-metal bearing ⇒ page 241

## 6.3 Removing and installing the rear final drive “02D/0AV”

**Special tools and workshop equipment required**

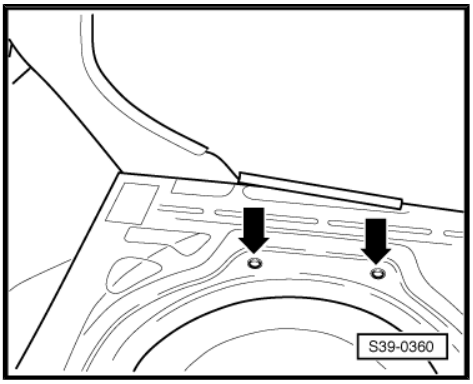
- ♦ Engine and gearbox jack e.g. -V.A.G 1383A-

## 6.3.1 Removing

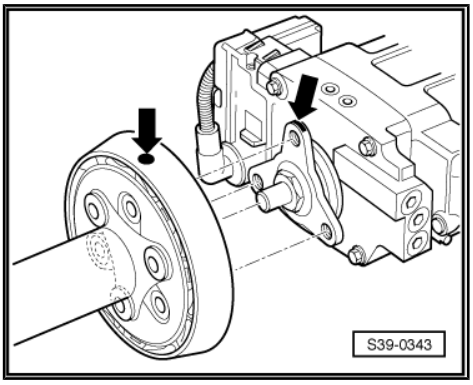
– Remove the two rubber plugs -arrows- in the luggage compartment floor.

– Unscrew both screws for the gearbox mount from the top through the holes -arrows-.

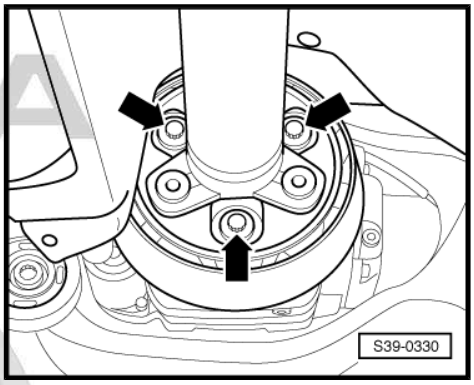
– Remove the rear silencer ⇒ Engine ⇒ Rep. Gr. 26 .




– Check, if a marking (colour point) is present on the flexible disk and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.



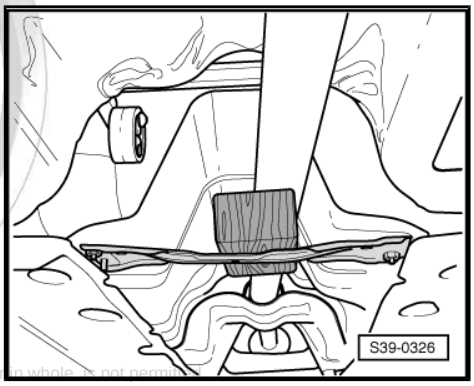

– Unscrew propshaft with flexible disk and oscillation damper from rear final drive -arrows-.




– Support propshaft with a wooden wedge on the tunnel support. If necessary remove rear flexible disk with oscillation damper from the propshaft.

– Separate both drive shafts from rear final drive ⇒ Chassis ⇒ Rep. Gr. 42 .

**Vehicles with aluminium assembly carrier:**

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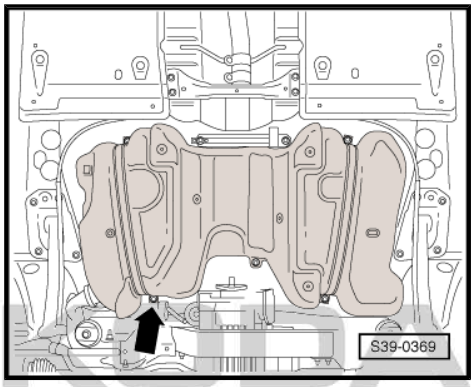
**Note**

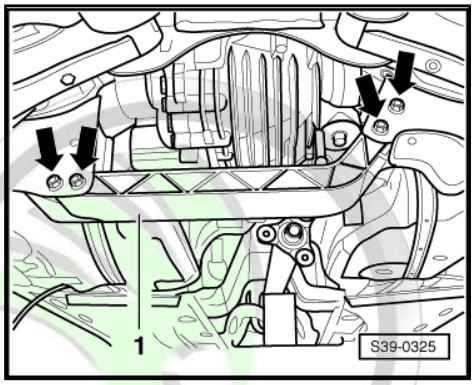
- *In order to remove all the screws (4 pieces) of the cross member, the screw -arrow - for the holder of the retaining strap for the heat shield of the fuel tank must be removed on the right side of the vehicle. Carefully swivel down this heat shield when removing the upper screw of the right cross member.*
- *The cross member is not fitted on vehicles with steel assembly carrier.*



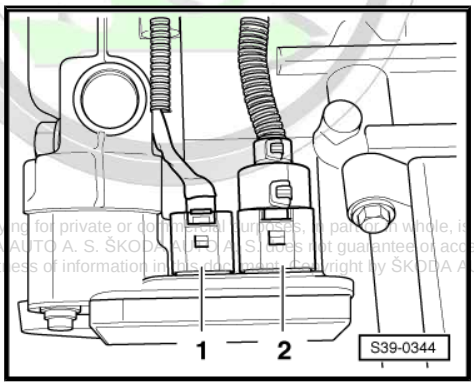

– Remove cross member -1-.

**Continued for all vehicles**

– Removing anti-roll bar ⇒ Chassis ⇒ Rep. Gr. 42 .




– Disconnect plug connection -2- at top of the control unit.

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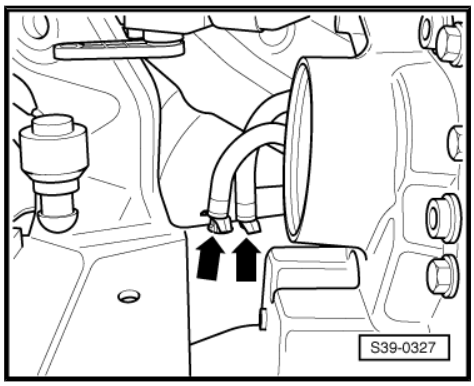
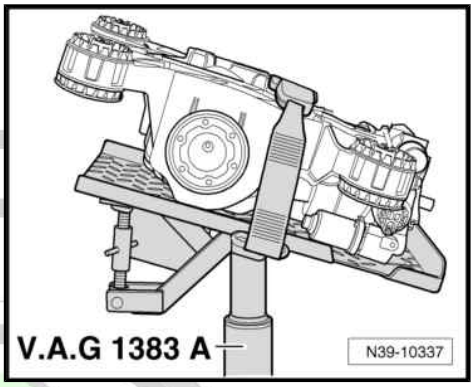
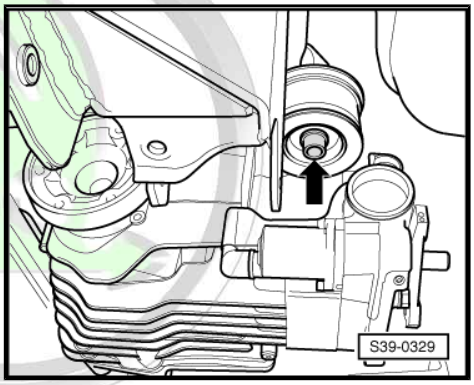
– Unclip both gearbox ventilation hoses -arrows- at assembly carrier.



– Position the engine and gearbox jack e.g. -V.A.G 1383A- below the rear final drive and secure the final drive.




– Unscrew the fixing screw -arrow- from the front bracket of the final drive.
– Slightly lower final drive and carefully pull out the engine and gearbox jack e.g. -V.A.G 1383A- from the rear assembly carrier.




## 6.3.2 Install

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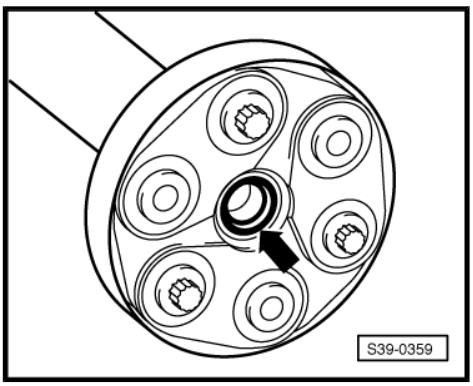
Installation is performed in the reverse order, pay attention to the following points:

When re-installing, assemble all the parts of the propshaft marked to each other in the same position.

The gasket ring -arrow- in the flange of the propshaft must not be damaged when removing and installing. In case of damaged gasket ring the propshaft must be replaced.

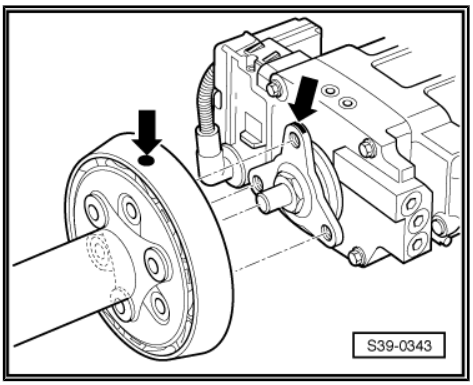



– Push propshaft horizontally onto the respective centering studs.

**Fitting position:**

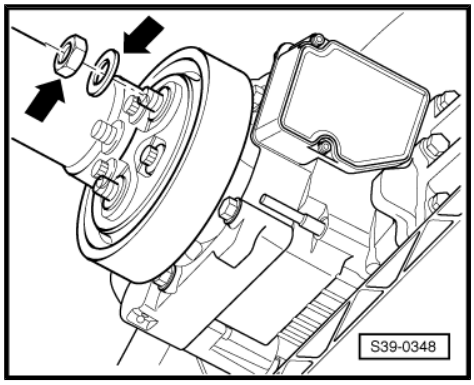
Three protruding bushings at the Haldex coupling flange or the propshaft flange grip into the location holes of the rear flexible disks with oscillation damper.

– Install the propshaft on the flange of the Haldex coupling in such a way that the markings -arrows- are on the same line.



**Note**

- *When replacing the rear final drive, the axle oil ⇒ page 306 and the oil for the Haldex coupling ⇒ page 300 must be checked and topped up if necessary.*
- *If droning noises occur while driving, the following must be observed.*
- *Remove balancing nut and balancing washer -arrows-.*
- *Afterwards unscrew if necessary the propshaft with the flexible disk from the flange of the Haldex coupling and screw on again offset to a hole.*
- *If the droning noises can still be heard, the propshaft must be screwed on once again offset to a hole.*




**Tightening torques**

| Component | Nm |
|---|---|
| Retaining strap for the heat shield of the fuel tank[1] | 25 |
| Flexible disk to propshaft | ⇒ page 233 |
| Propshaft to rear final drive | ⇒ page 233 |
| Rear final drive to assembly carrier[1] | ⇒ Chassis ⇒ Rep. Gr. 42 |

[1] Always replace screws ⇒ Electronic Catalogue of Original Parts .

## 6.4 Removing and installing the rear final drive “0BR”

**Special tools and workshop equipment required**

- Engine and gearbox jack e.g. -V.A.G 1383A-
- Socket insert -T10061-

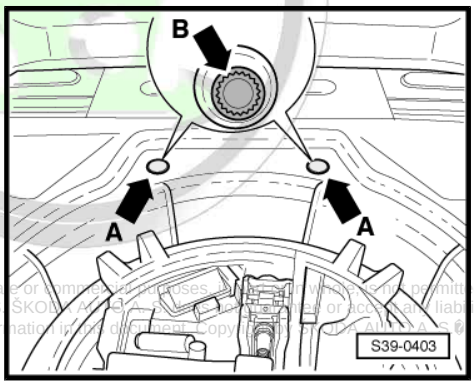
### 6.4.1 Removing

– Remove the luggage compartment-floor covering.

– Remove the two rubber plugs -arrows A- in the luggage compartment floor.

– Release both screws -arrow B- for the rear final drive to the assembly carrier from the top through the holes in the luggage compartment floor. Thus, the socket insert -T10061- can be used.

– Raise vehicle.

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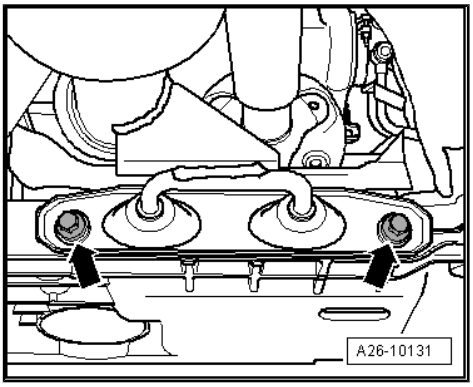
– Separate exhaust system at the clamping sleeve and remove bracket for the exhaust system from the assembly carrier ⇒ Engine ⇒ Rep. Gr. 26 .

– Tie up pre-exhaust pipe.



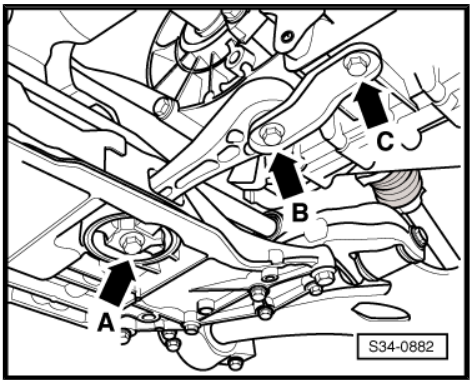

**Note**

*The decoupling elements in the exhaust pipe should not be bent by more than 10° - risk of damage.*

– Remove the rear part of the exhaust system as from the clamping sleeve ⇒ Engine ⇒ Rep. Gr. 26 .

– Remove the heat shield below the propshaft.

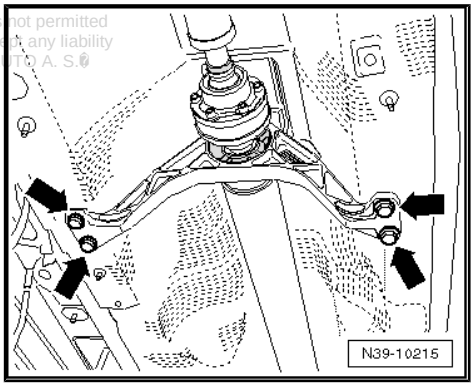
– Unscrew screws -arrow B- and -arrow C- and remove pendulum support from gearbox.



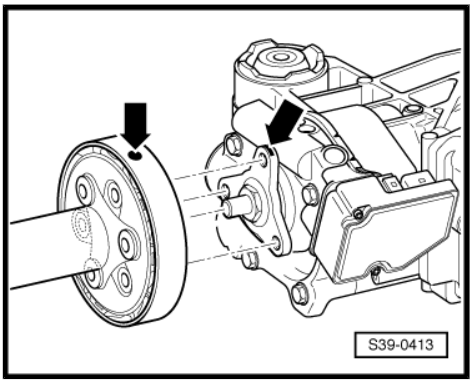

**Note**

*Do not release screw -arrow A-.*

– Slacken the intermediate bearing of the propshaft from the body by approx. 4 turns -arrows-.




– Check, if a marking (colour point) is present on the flexible disk/oscillation damper and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.

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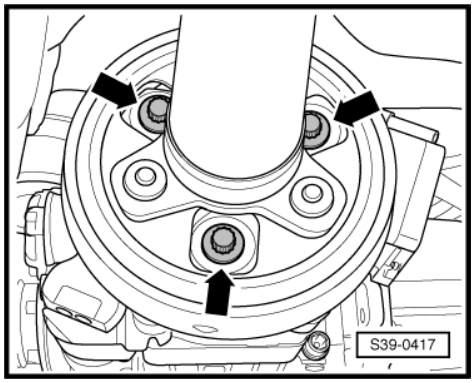
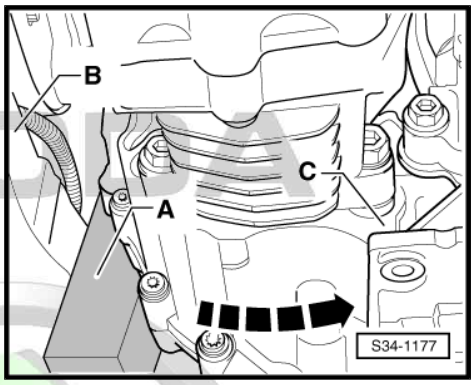
– Unscrew propshaft with flexible disk and oscillation damper from rear final drive -arrows-.

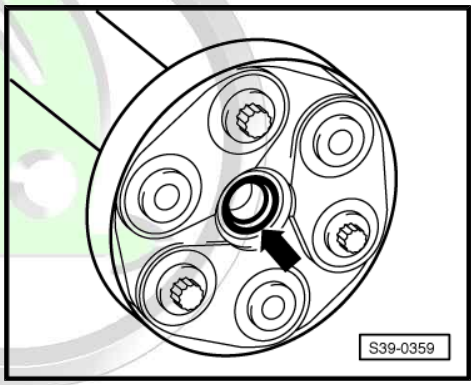



– Push the engine/gearbox unit to the front with a 2nd mechanic in -direction of arrow- and insert a suitable wooden wedge -A- (approx. 50 mm thick) between the assembly carrier -B- and the gearbox -C-.
– While doing so, remove the propshaft from the flange at the Haldex coupling (centering stud) on the rear final drive.




**Note**

*Do not tilt propshaft when removing, pull off horizontally from centering stud of rear final drive. Gasket ring/centering bushing -arrow- must not be damaged, otherwise the propshaft has to be replaced.*




– Tie up the rear part of the propshaft -A- for the suspension -B- of the exhaust gas system.

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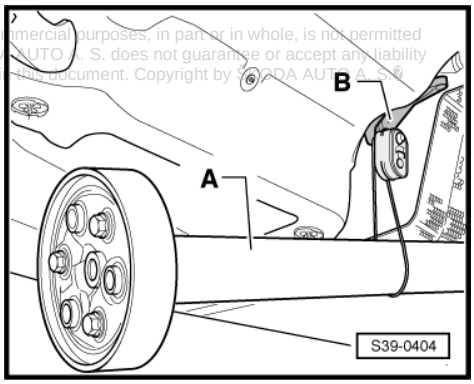
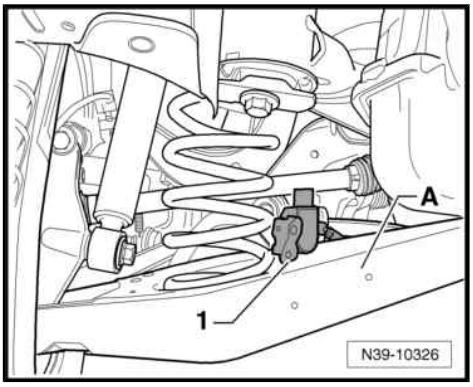


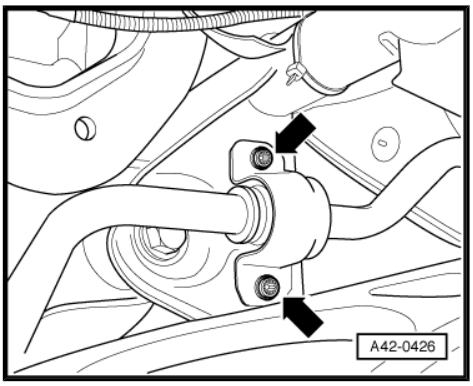
So that the rear left vehicle level sensor -G76- -1- is not damaged.

– Disconnect the plug, unscrew the sender and place down on the bottom suspension arm -A-.
– Unscrew both drive shafts at rear final drive.
– Removing anti-roll bar ⇒ Chassis ⇒ Rep. Gr. 42 .




**Note**

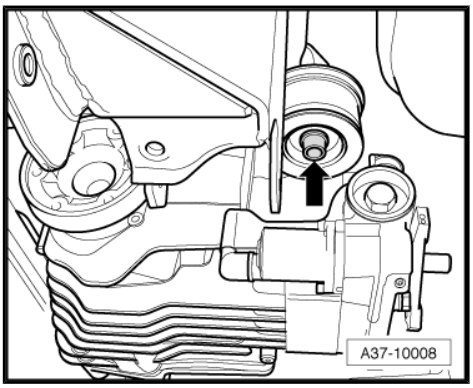
*In order to unscrew and screw in the upper fixing screw -top arrow- for the anti-roll bar clamp, remove the relevant drive shaft from the flange shaft of the final drive and press upwards.*



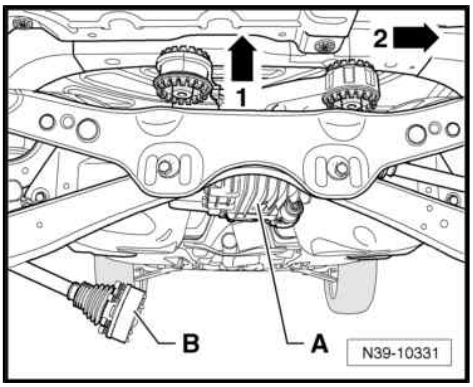

– Do not slacken the screw -arrow- at the front bracket more than 5 turns.

**Note**

*The final drive is now loose.*




– Raise the rear final drive -A- -arrow 1- and slide it as far to the right as possible -arrow 2-.
– Remove the left drive shaft -B- from the flange and carefully guide downwards.

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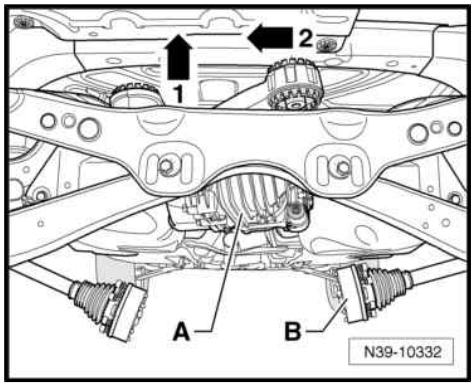
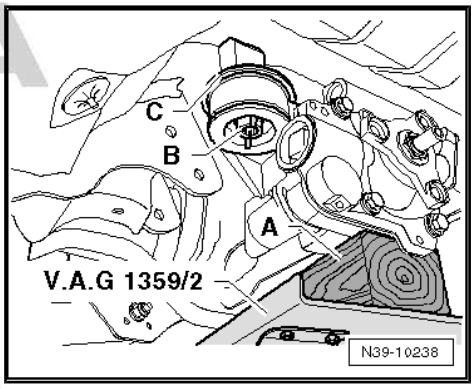
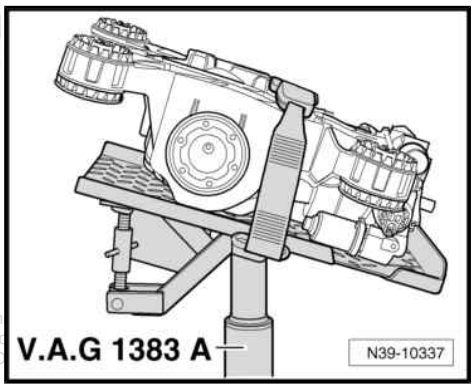
– Raise the rear final drive -A- -arrow 1- and slide it as far to the left as possible -arrow 2-.
– Remove the right drive shaft -B- from the flange and carefully guide downwards.
– Move the final drive back into its installed position.




– Place a suitable wooden wedge -A- onto the universal holder.
– Support the final drive with the engine and gearbox jack -V.A.G 1383 A- and secure it with the belt on the universal holder against falling down.
– Release screw -B- at the front bracket.
– Remove the washer -C- from the top of the bracket.




– Swivel the final drive on the vehicle (see fig.) and at the same time slightly lower.

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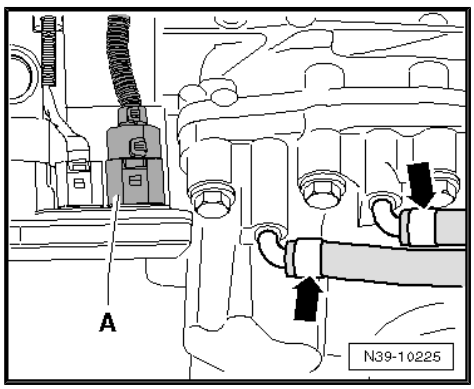
– Disconnect the plug connection -A- on the four-wheel drive control unit -J492- .
– Remove the ventilation lines -arrows- from the final drive.
– For removing, lower the final drive further and pull it “towards the front”, ensuring adequate “distance” from the other components.

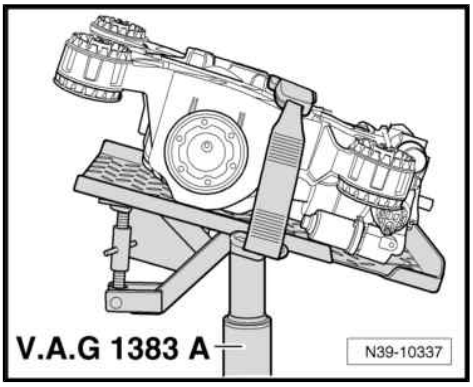



## 6.4.2 Install

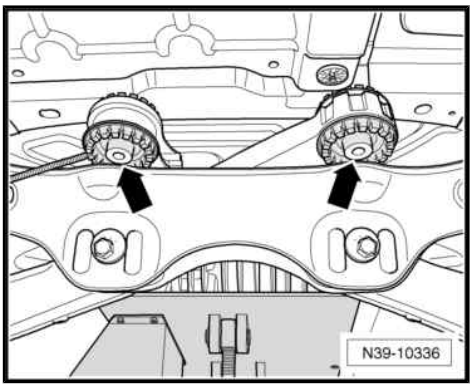
Installation is performed in the reverse order, pay attention to the following points:

– Secure the final drive with the belt of the universal holder against falling down.

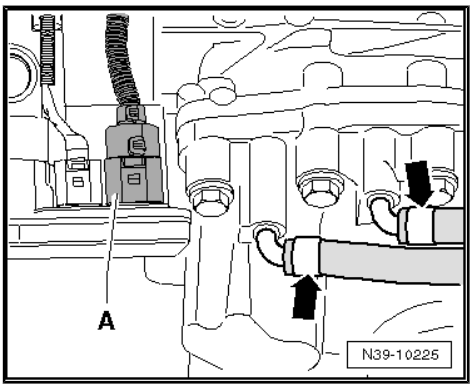
– Bring the final drive into the indicated position.




– Raise the final drive and guide the rear bracket -arrows- above the assembly carrier, during this procedure ensure that there is adequate free access to the adjoining components.




– Mount the plug connection -A- on the four-wheel drive control unit -J492- .
– Install the ventilation lines -arrows- onto the ventilation pipes of the final drive.
– Move the final drive into its installed position using the engine and gearbox jack -V.A.G 1383 A- .

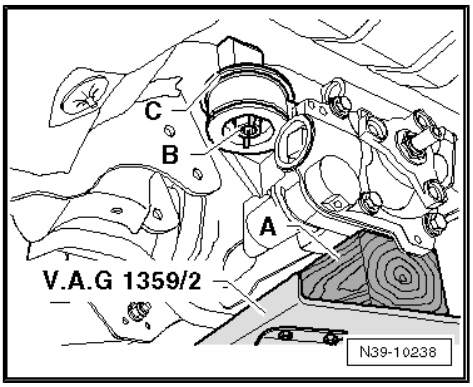



– Place the washer -C- on the front bracket.
– Tighten screw -B- by hand.

**Note**

*The rear part of the final drive must be free in order to install the drive shafts.*

– Remove the engine and gearbox jack -V.A.G 1383 A- from underneath the vehicle.

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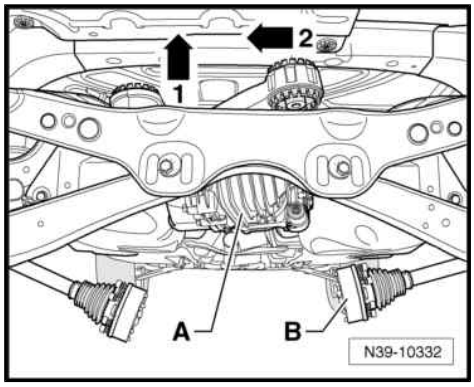
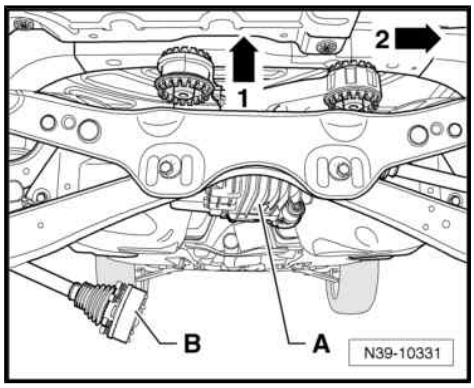
– Raise the rear final drive -A- -arrow 1- and slide it as far to the left as possible -arrow 2-.
– Carefully guide the right drive shaft -B- upwards into the flange.

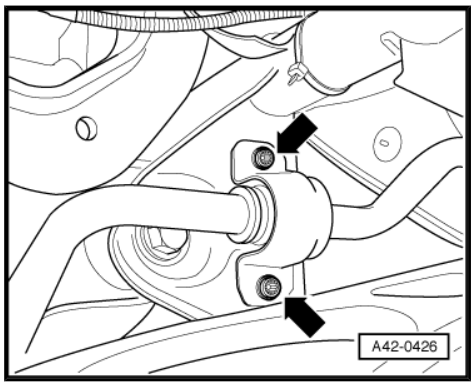



– Raise the rear final drive -A- -arrow 1- and slide it as far to the right as possible -arrow 2-.
– Carefully guide the left drive shaft -B- upwards into the flange.
– Install the anti-roll bar ⇒ Chassis ⇒ Rep. Gr. 42 .

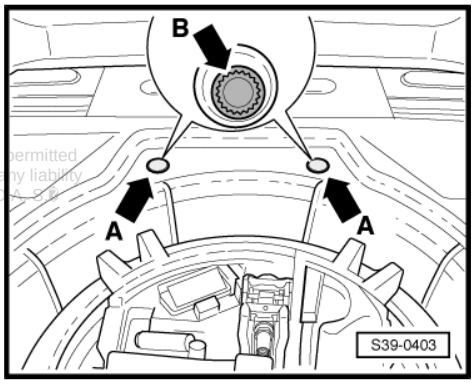



**Note**

*In order to unscrew and screw in the upper fixing screw -top arrow- for the anti-roll bar clamp, grip the relevant drive shaft in the flange shaft of the final drive and press upwards.*




– Fit two “new” screws -arrow B- through the holes in the luggage compartment floor and tighten. Tightening torque ⇒ Chassis ⇒ Rep. Gr. 42 .
– Fit the two rubber plugs -arrows A- in the luggage compartment floor.

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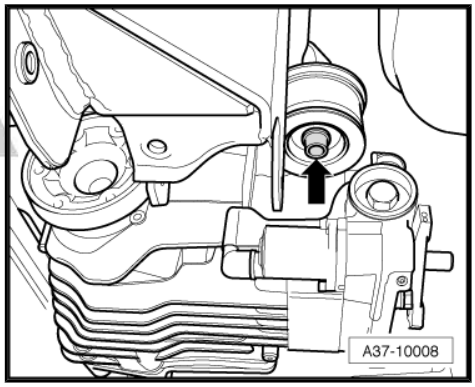
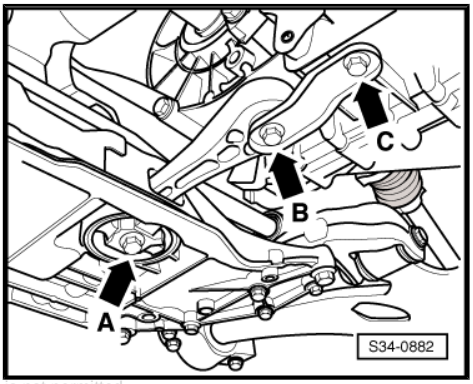
– Tighten the final drive from “below” -arrow-. Tightening torque ⇒ Chassis ⇒ Rep. Gr. 42 .
– Install propshaft at final drive and tighten. Tightening torque ⇒ page 223 .
– Tighten the drive shafts. Tightening torque ⇒ Chassis ⇒ Rep. Gr. 42 .




– Tighten the pendulum support with “new” screws -arrows B and C- at the gearbox. Tightening torques ⇒ engine ⇒ Rep. Gr. 10 .

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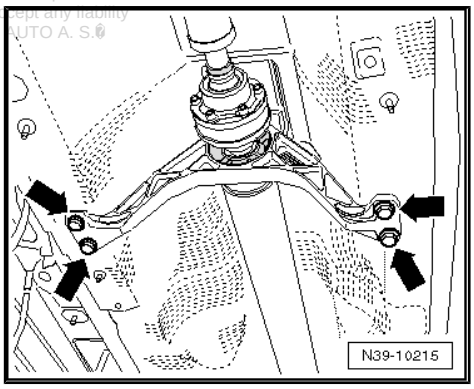
– Align intermediate bearing free of stress and tighten. Tightening torque ⇒ page 233 .
– Install the heat shield below the propshaft.
– Install rear left vehicle level sensor -G76- ⇒ Chassis ⇒ Rep. Gr. 42 .

Carry out the basic setting of the headlight; to do so use ⇒ Vehicle diagnosis, testing and information system VAS 5051.

– Install exhaust system ⇒ Engine ⇒ Rep. Gr. 26 .

If the final drive was replaced:

– Check the oil level in the Haldex coupling, top up with oil if necessary ⇒ page 300 .
– Check the oil level in the rear final drive, top up with oil if necessary ⇒ page 306 .



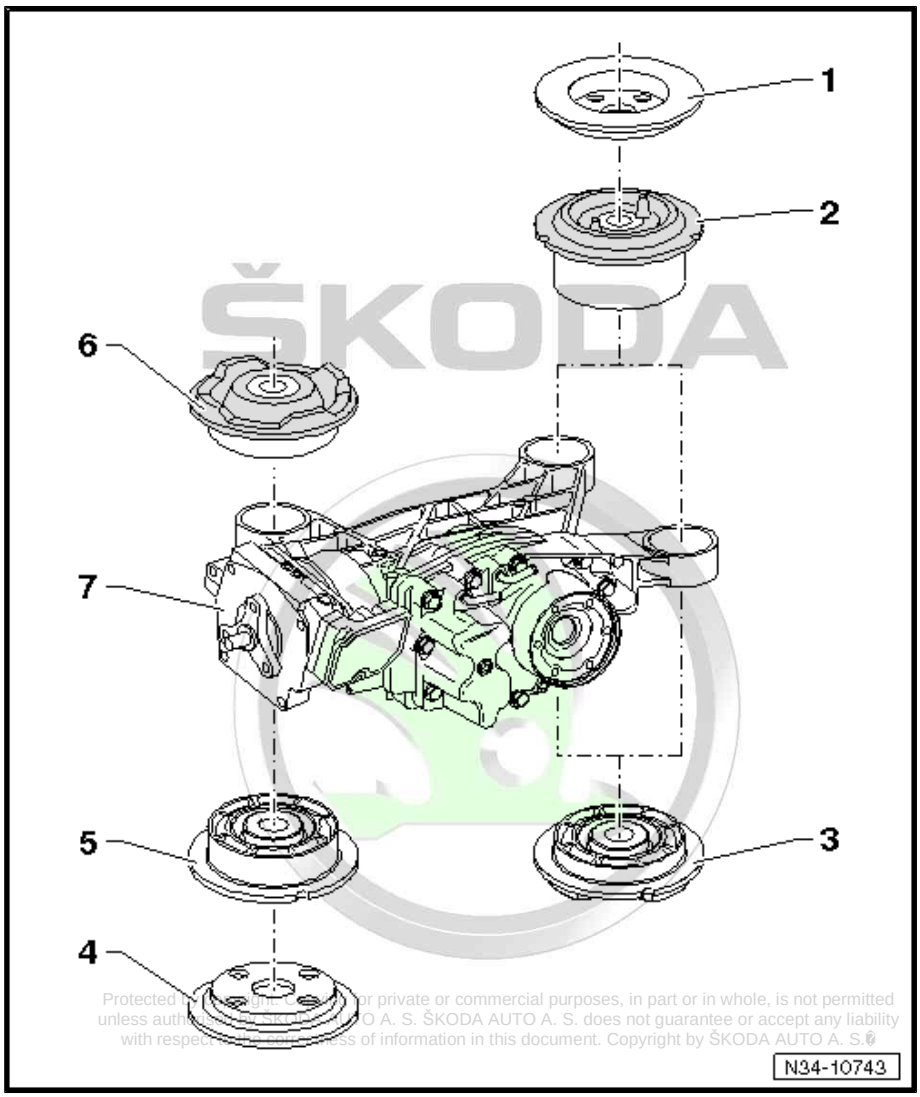

## 6.5 Replace rubber-metal bearing at the rear final drive

**Special tools and workshop equipment required**

- Drift pin -MP3-426 (30 - 505)-
- Thrust piece -MP3-417 (VW 554) -
- Assembly device -MP5-400 (3416)-
- Assembly device -MP5-401 (3346)-
- Assembly device -MP5 402 (3301)-
- Interior extractor 12 … 14.5 mm , e.g. -Kukko 21/1-
- Countersupport , e.g. -Kukko 22/1-

## Note

*The illustration shows the rear final drive “02D/0AV”. Replacing the rubber-metal bearings on the rear final drive “0BR” is indentical.*




**1 - Stop washer**

- ❑ remove before removing the rubber-metal bearing Pos. 2
- ❑ install onto the rubber-metal bearings Pos. 2 ⇒ page 257

**2 - Rubber-metal bearing “rear top”**

- ❑ removing ⇒ page 255
- ❑ Difference between the rubber-metal bearings “rear top” and “front bottom” ⇒ page 256
- ❑ Fitting position ⇒ page 257
- ❑ inserting ⇒ page 255

**3 - Rubber-metal bearing “rear bottom”**

- ❑ removing ⇒ page 255
- ❑ inserting ⇒ page 255

**4 - Stop washer**

- ❑ remove before removing the rubber-metal bearing Pos. 5
- ❑ install onto the rubber-metal bearing Pos. 5 ⇒ page 257

**5 - Rubber-metal bearing “front bottom”**

- ❑ removing ⇒ page 255
- ❑ Difference between the rubber-metal bearings “rear top” and “front bottom” ⇒ page 256
- ❑ Fitting position ⇒ page 257
- ❑ inserting ⇒ page 256

**6 - Rubber-metal bearing “front top”**

- ❑ removing ⇒ page 256
- ❑ inserting ⇒ page 256

**7 - Rear final drive**

- ❑ removing and installing ⇒ page 242

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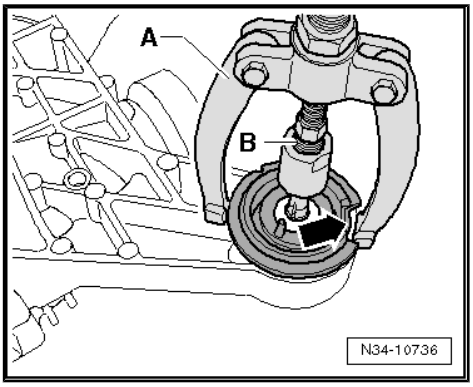
### Pull out rubber-metal bearing “rear top”

A - Countersupport , e.g. -Kukko 22/1-

B - Interior extractor 12 … 14.5 mm , e.g. -Kukko 21/1-

– A piece must be broken off from the collar of the rubber-metal bearing in order to be able to position the countersupport -arrow-.

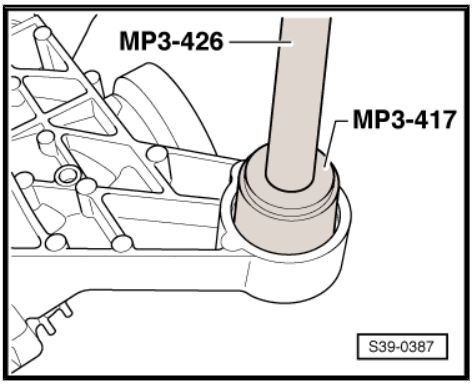
– Insert the interior extractor into the joint of the upper and lower rubber-metal bearing and put it under tension.



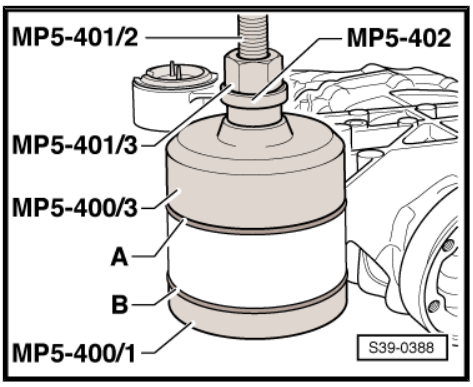

### Drive out rubber-metal bearing “rear bottom”

**Note**

*If the rubber-metal bearing should be replaced individually, it can also be pulled out with the countersupport , e.g. -Kukko 22/1 - and the interior extractor 12...14.5 mm , e.g. -Kukko 21/1-*
*⇒ page 255* .




### Insert rubber-metal bearing “rear top” -A- and “rear bottom” -B-




### Pull out the rubber-metal bearing “front bottom”

– Both ventilation pipes must be closed so that in the following work step no oil escapes from the final drive.

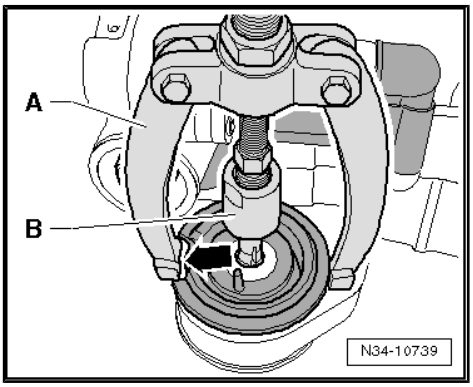
– Then place the final drive with the upper part towards the bottom onto the work bench and pull out the rubber-metal bearing:

A - Countersupport , e.g. -Kukko 22/1-

B - Interior extractor 12 … 14.5 mm , e.g. -Kukko 21/1-

– A piece must be broken off from the collar of the rubber-metal bearing in order to be able to position the countersupport -arrow-.

– Insert the interior extractor into the joint of the upper and lower rubber-metal bearing and put it under tension.

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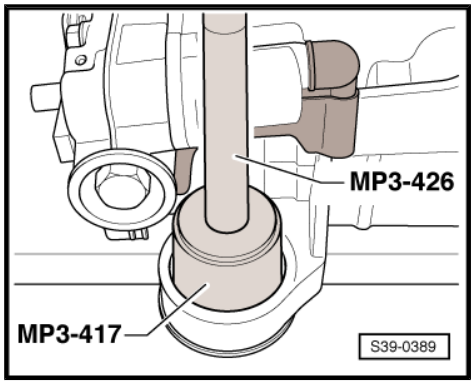
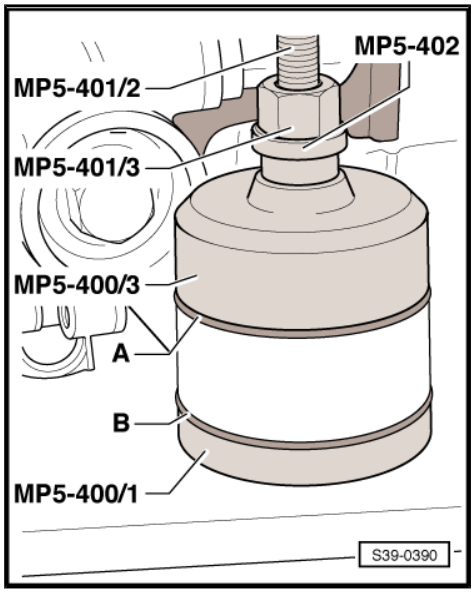
### Drive out rubber-metal bearing “front top”




**Note**

*If the rubber-metal bearing should be replaced individually, it can also be pulled out with the countersupport , e.g. -Kukko 22/1 - and the interior extractor 12...14.5 mm , e.g. -Kukko 21/1-*
*⇒ page 255* .

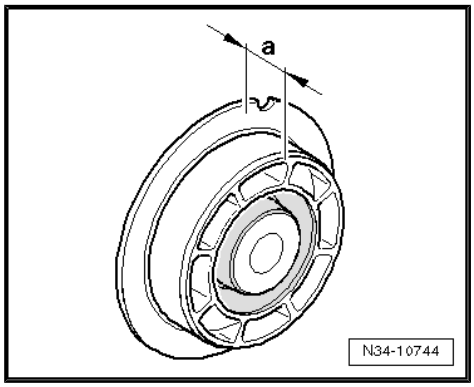
### Insert rubber-metal bearing “front bottom” -A- and “front top” -B-




### Difference between the rubber-metal bearings “rear top” and “front bottom”

The rubber-metal bearings “rear top” and “front bottom” differ in height.

| Dimension “a” mm | Rubber-metal bearing |
|---|---|
| 22 | “rear top” |
| 17 | “front bottom” |

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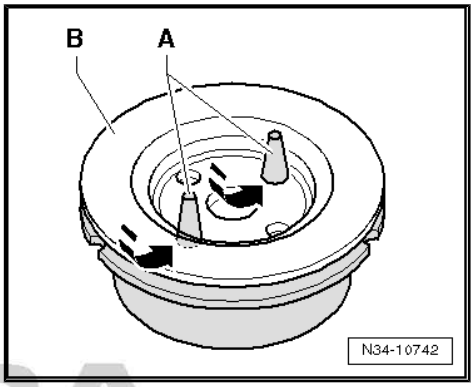
**Fitting position of rubber-metal bearings “rear top” and “front bottom”, fitting of the stop washer -B-**

- Final drive in fitting position

**Fitting position of the rubber-metal bearings “rear top” and “front bottom”:**

- ♦ The rubber-metal bearings “rear top” ⇒ Item 2 (page 254) point with the stud -A- to the top
- ♦ The rubber-metal bearing “front bottom” ⇒ Item 5 (page 254) points with the stud -A- to the bottom




**Fitting of the stop washer -B-**

– Pull the studs -A- into the holes of the stop washer -arrows-.

The stop washer -B- is then connected captively with the rubber-metal bearing.

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# 7 Replace gasket rings for flange shaft rear final drive (rear final drive installed)

**Special tools and workshop equipment required**

- Ejection lever -MP3-418 (VW 681)-
- Extractor -T10037-
- Thrust piece -T10049-
- Catch pan
- Sealing grease -G 052 128 A1-

## 7.1 Removing and installing gasket ring for flange shaft

### 7.1.1 Removing

The removal of the gasket ring is identical on both left and right.

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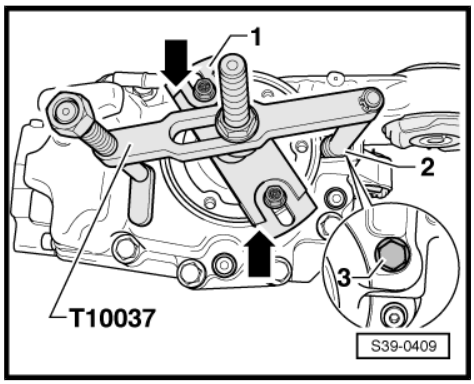
– Remove drive shaft ⇒ Chassis ⇒ Rep. Gr. 42 .
– Place a catch pan under the rear final drive.

**Remove the left flange shaft**

– Manually screw the plate -1- of the extractor -T10037- with two screws M8 (30 mm long) onto the flange shaft.



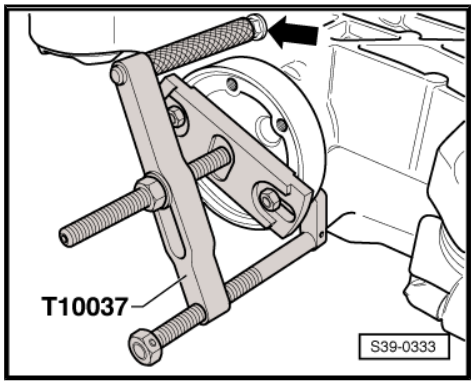

• The shoulders -arrows- for larger flange diameters point to the outside.

– Position the nut of the knurled screw -2- of the extractor -T10037- onto the hexagon screw -3-.
– Pull out the flange shaft with extractor -T10037- .

**Removing the right flange shaft**

– Manually screw the plate of the extractor -T10037- with two screws M8 (30 mm long) onto the flange shaft.

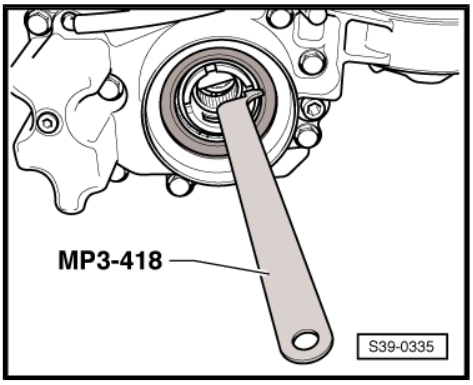
• The shoulders for larger flange diameters point to the outside.




– Fit the nut of the knurled screw -arrow- of the extractor -T10037- in such a way that the start of the thread is aligned with the housing.
– Pull out the flange shaft with extractor -T10037- .

**Proceed as follows for both sides**

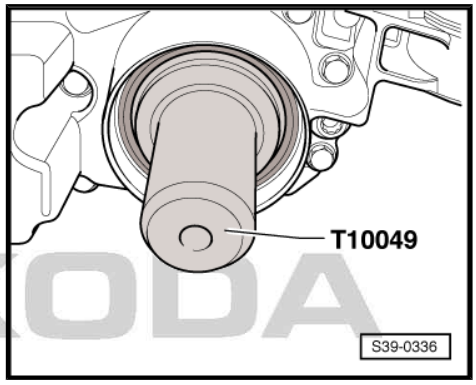
– Pull out gasket ring for flange shaft with ejection lever - MP3-418- .




## 7.1.2 Install

– Lightly oil new gasket ring at outside diameter and drive in with pressure plate -T10049- up to the stop, do not twist the gasket ring.

– Fill half the space between the sealing lip and dust lip with sealing grease -G 052 128 A1- .



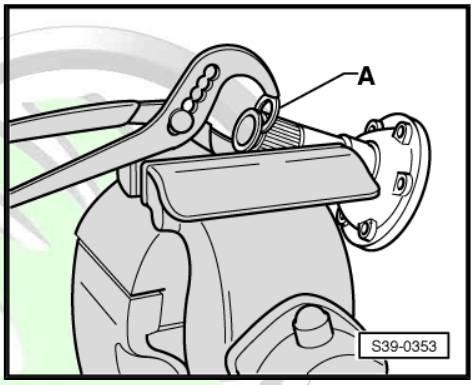

– Clamp the flange shaft in a vice with protective jaws.

– Push out the old circlip from the flange shaft groove with the new circlip -A-.

– Drive in the flange shaft with a rubber hammer.

– Install drive shaft ⇒ Chassis ⇒ Rep. Gr. 42 .

– Checking the oil level in the rear final drive ⇒ page 306 .

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# 8 Replace gasket ring for flange on the Haldex coupling on installed rear final drive

**Special tools and workshop equipment required**

- Ejection lever -MP3-418 (VW 681)-
- Thrust piece -T10019-
- Extractor -T10037-
- Tensioning strap -T10038-
- Counterholder -T30004 (3415)-
- Engine and gearbox jack e.g. -V.A.G 1383A -
- Three armed extractor e.g. -Kukko 12/1-
- Catch pan
- Locking agent -D 000 600-
- Bolt M10 x 25
- Allan screw M8 x 15

## 8.1 Remove and install gasket ring for flange on the Haldex coupling

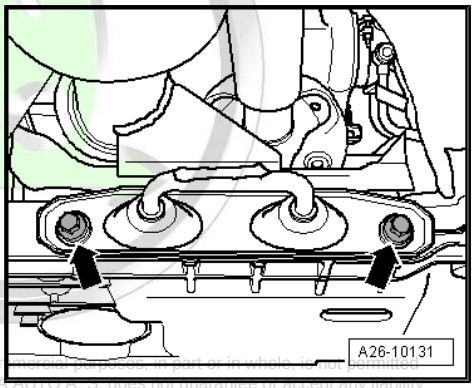
### 8.1.1 Removing

– Raise vehicle.

– Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .

– Separate exhaust system at the clamping sleeve and remove bracket for the exhaust system from the assembly carrier ⇒ Engine ⇒ Rep. Gr. 26 .

– Tie up pre-exhaust pipe.



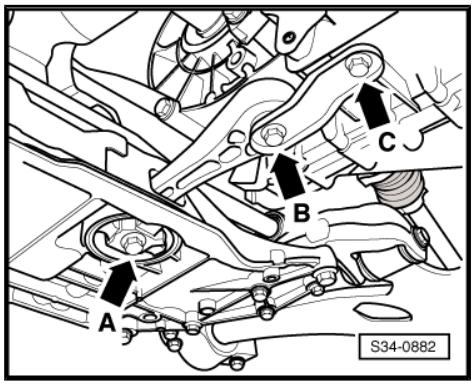

**Note**

*The decoupling elements in the exhaust pipe should not be bent by more than 10° - risk of damage.*

– Remove the rear part of the exhaust system as from the clamping sleeve ⇒ Engine ⇒ Rep. Gr. 26 .

– Remove the heat shield below the propshaft.

– Unscrew screws -arrow B- and -arrow C- and remove pendulum support from gearbox.




**Note**

*Do not release screw -arrow A-.*

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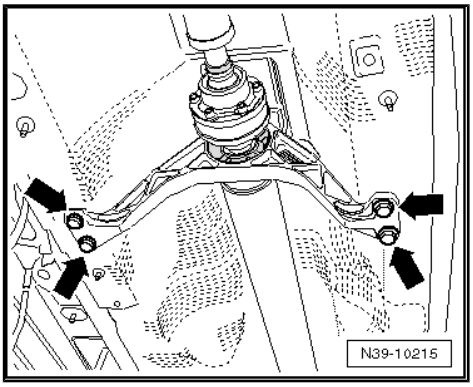
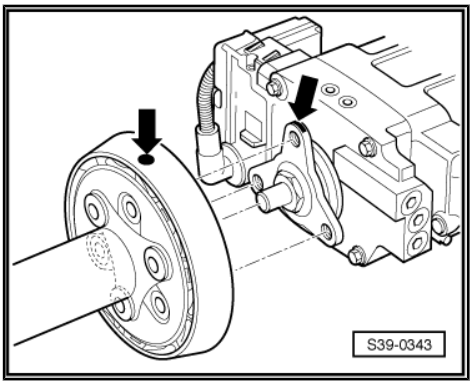
– Slacken the intermediate bearing of the propshaft from the body by approx. 4 turns -arrows-.

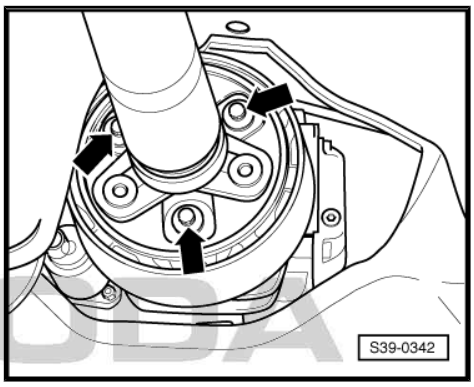



**Vehicles with rear final drive “02D/0AV”**

– Check, if a marking (colour point) is present on the flexible disk/oscillation damper and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.

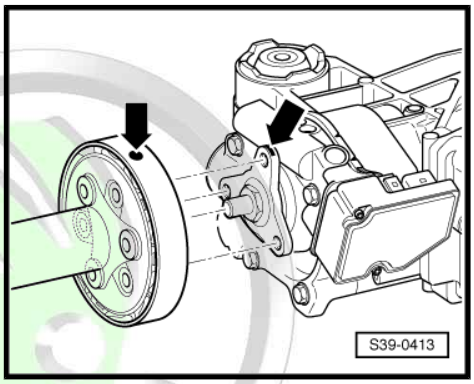



– Unscrew propshaft with flexible disk and oscillation damper from rear final drive -arrows-.




**Vehicles with rear final drive “0BR”**

– Check, if a marking (colour point) is present on the flexible disk/oscillation damper and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.

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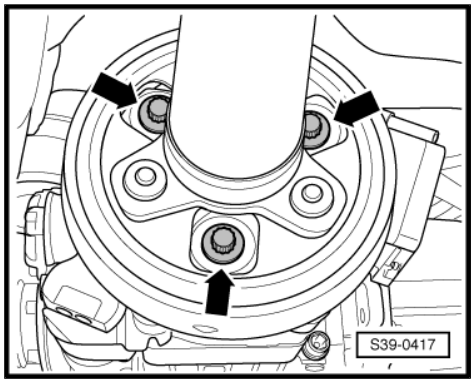
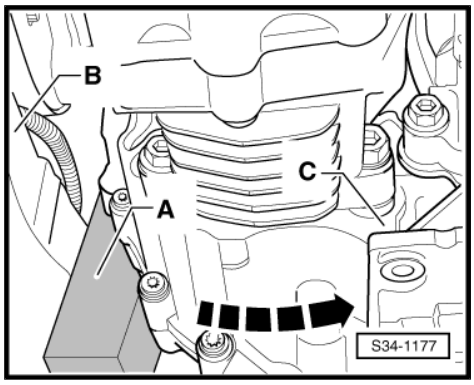
– Unscrew propshaft with flexible disk and oscillation damper from rear final drive -arrows-.




**Continued for all vehicles**

– Push the engine/gearbox unit to the front with a 2nd mechanic in -direction of arrow- and insert a suitable wooden wedge -A- (approx. 50 mm thick) between the assembly carrier -B- and the gearbox -C-.

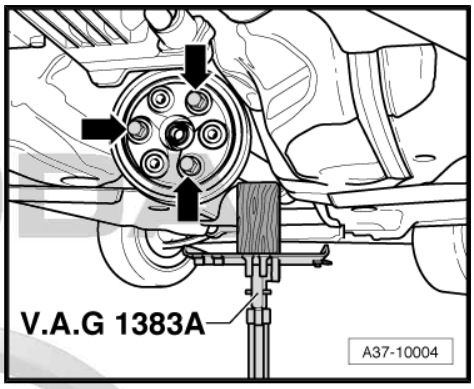
– While doing so, remove the propshaft from the flange at the Haldex coupling (centering stud) on the rear final drive.




– Support propshaft with Engine and gearbox jack , e.g. -V.A.G 1383A - .

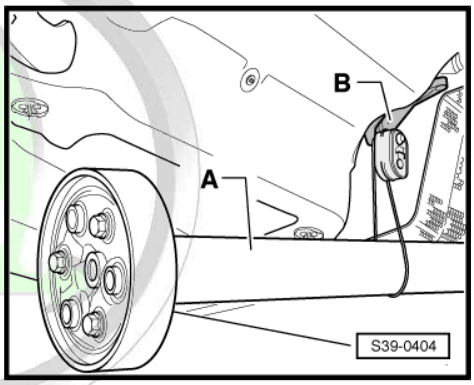
**Vehicles - “two-piece” propshaft**

– If necessary remove rear flexible disk with oscillation damper from the propshaft -arrows-.




**Vehicles - “one-piece” propshaft**

– Tie up the rear part of the propshaft -A- for the suspension -B- of the exhaust gas system.




**Continued for all vehicles**

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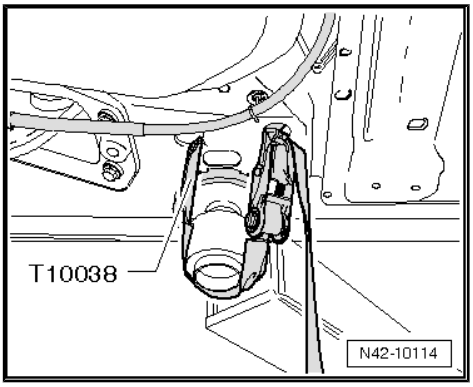
– Lash the vehicle securely to the lift platform using tensioning straps -T10038- .



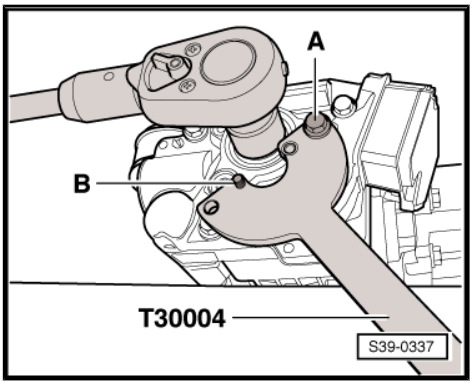

**WARNING**

***If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.***

– Unscrew hexagon nut at flange of Haldex coupling.

-A- Screw M10 x 25

-B- Allen screw M8 x 15 (is screwed in from the reverse side into the counterholder -T30004- )




– Disconnect flange for Haldex coupling. If there is any resistance, use three armed extractor , e.g. -Kukko 12/1- .

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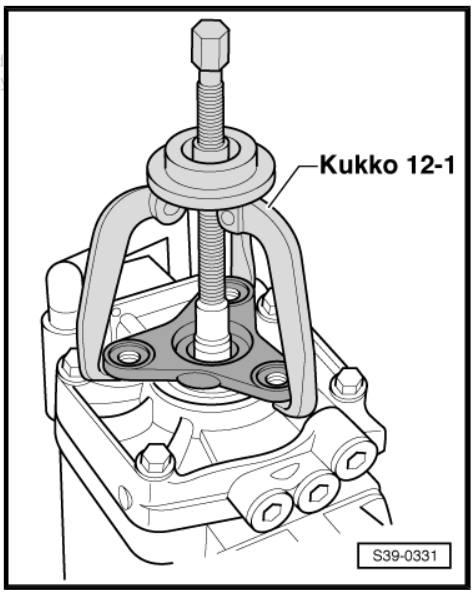
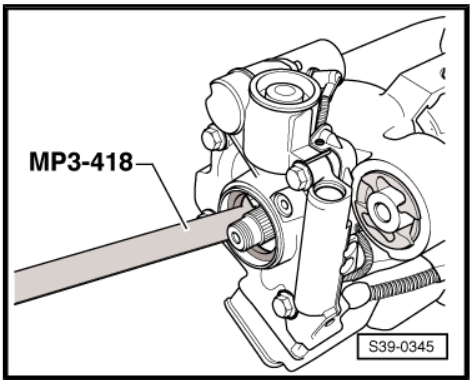



– Pull out gasket ring with ejection lever -MP3-418- .

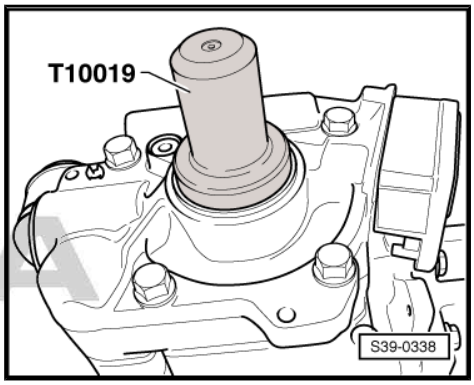


## 8.1.2 Install

– Before installing, slightly oil new gasket ring on the outside diameter and between the sealing lips with high efficiency oil for Haldex coupling .

– Drive in new gasket ring with pressure plate -T10019- up to the stop. Do not tilt the gasket ring during this process.

– Drive in flange for Haldex coupling.

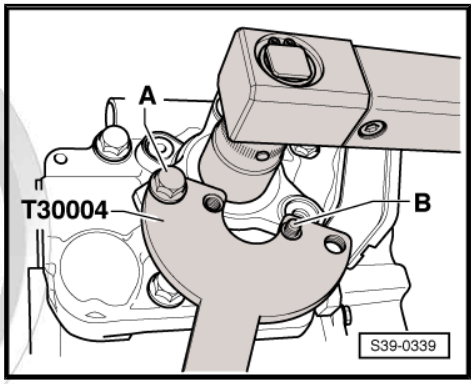



– Insert new hexagon nut with locking agent -D 000 600- and tighten.

-A- Screw M10 x 25

-B- Allen screw M8 x 15 (is screwed in from the reverse side into the counterholder -T30004- )

– Install propshaft to final drive ⇒ page 223 .




– Tighten the pendulum support with “new” screws -arrows B and C- at the gearbox. Tightening torques ⇒ engine ⇒ Rep. Gr. 10 .

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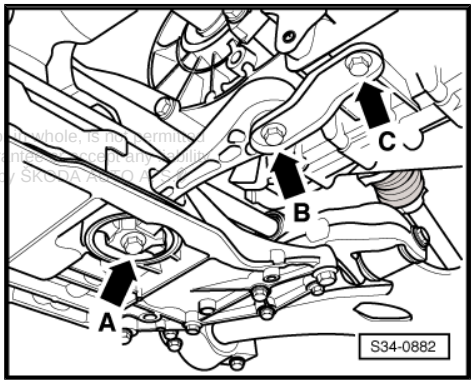
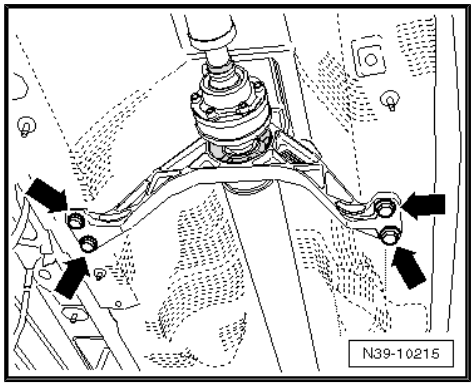



– Align intermediate bearing free of stress and tighten to tightening torque ⇒ page 233 .

– Install exhaust system and align free of stress ⇒ Engine ⇒ Rep. Gr. 26 .

– Check oil level in the Haldex coupling ⇒ page 300

– Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .



### Tightening torques

| Component | Nm |
|---|---|
| Flange of Haldex coupling at rear final drive[1)] | 210 |
| Flexible disk at propshaft (“two-piece” propshaft) | ⇒ page 233 |
| Propshaft to rear final drive | ⇒ page 233 |

1) Always replace nut ⇒ Electronic Catalogue of Original Parts .

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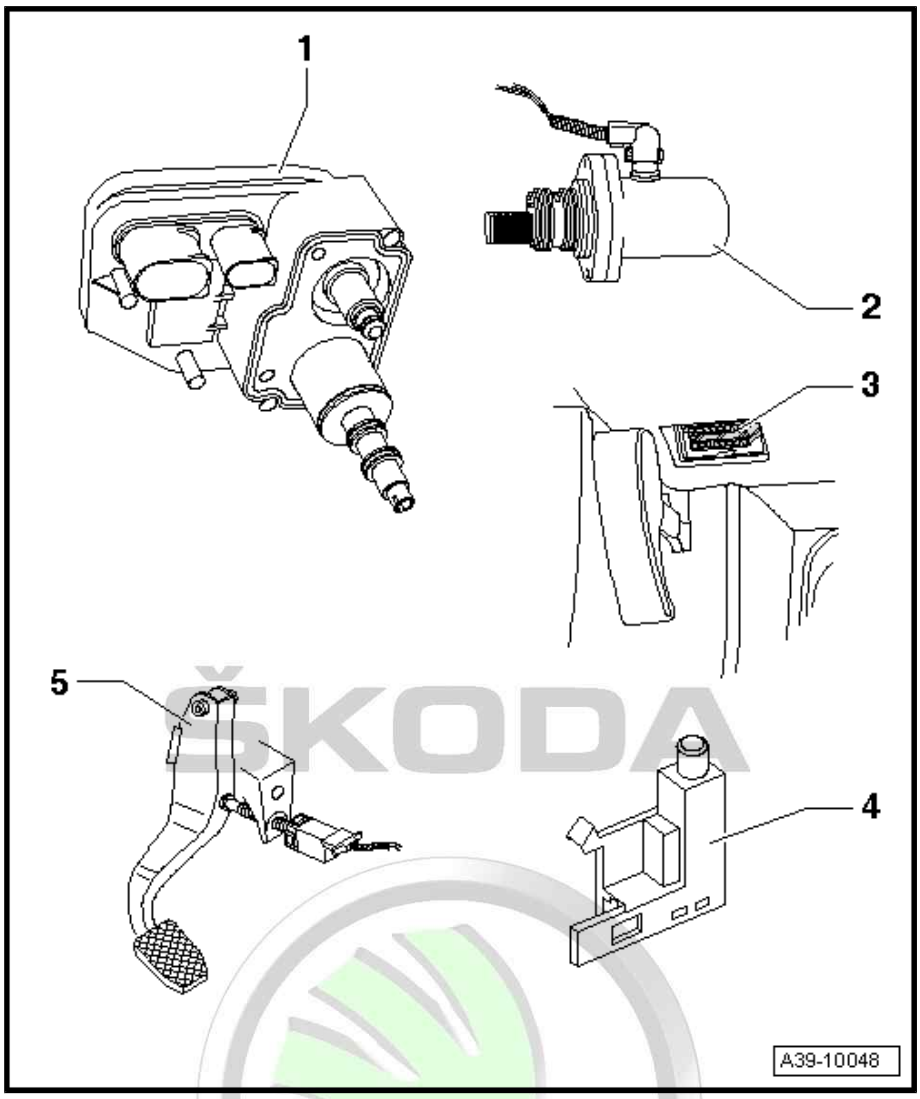
# 9 Electrical/electronic components and fitting locations for the Haldex coupling

## 9.1 Electric/electronic components and their fitting locations (final drive “02D/ 0AV”)




**1 - Four-wheel drive control unit -J492 -**

- ❑ Fitting location ⇒ page 267
- ❑ forms a single unit with the control valve for opening degree of coupling -N373-
- ❑ the pressure sensor is also located in the control unit - removing and installing ⇒ page 272
- ❑ important signals from the engine control unit and the ABS control unit with EDL -J104- are transmitted via the databus to the four-wheel drive control unit

**2 - Pump for Haldex coupling -V181-**

- ❑ Fitting location ⇒ page 267
- ❑ the pump can be inspected with ⇒ Vehicle diagnosis, testing and information system VAS 5051 in the operating mode “Targeted fault finding”
- ❑ removing and installing ⇒ page 277

**3 - Diagnostic connection**

- ❑ is located in the front left footwell, next to the front flap control lever

**4 - Switch for hand-brake control -F9-**

- ❑ Fitting location ⇒ page 267
- ❑ the switch can be inspected with ⇒ Vehicle diagnosis, testing and information system VAS 5051 in the operating mode “Targeted fault finding”
- ❑ removing and installing ⇒ Chassis ⇒ Rep. Gr. 46

**5 - Brake light switch -F-**

- ❑ Fitting location up to 10.05 ⇒ page 267
- ❑ Fitting location as of 11.05 ⇒ page 268
- ❑ the switch can be inspected with ⇒ Vehicle diagnosis, testing and information system VAS 5051 in the operating mode “Targeted fault finding”
- ❑ removing and installing ⇒ Chassis ⇒ Rep. Gr. 46

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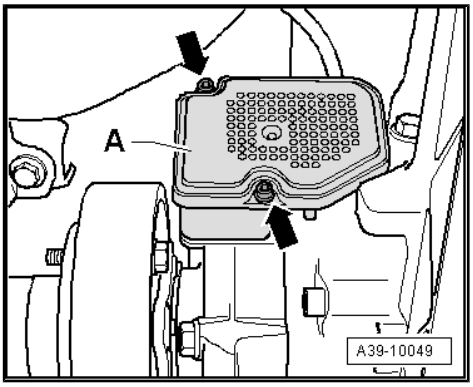
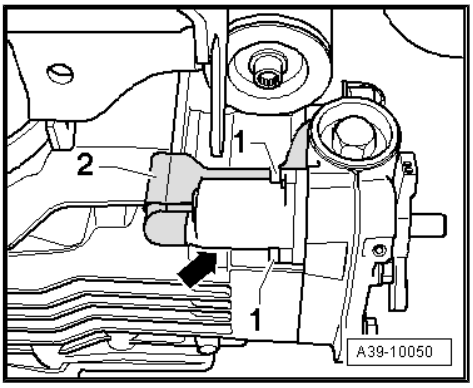
### Four-wheel drive control unit -J492-

Fitting location: Control unit -A- is located on the rear final drive, in front (left) area.



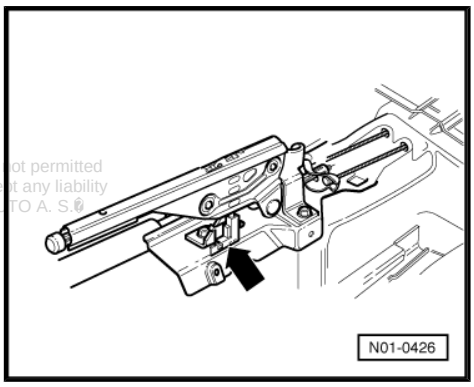

### Pump for Haldex coupling -V181-

Fitting location: Pump for Haldex coupling -arrow- is located on the rear final drive, in front (right) area.




### Switch for hand-brake control -F9-

Fitting location:Switch -arrow- is located on the hand-brake lever.

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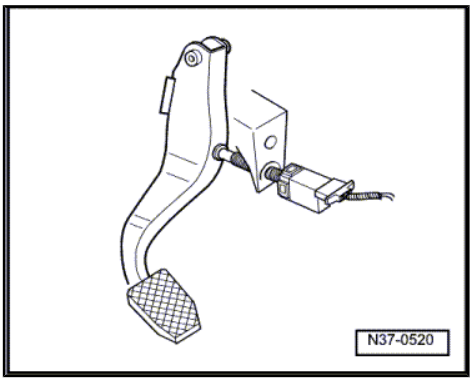
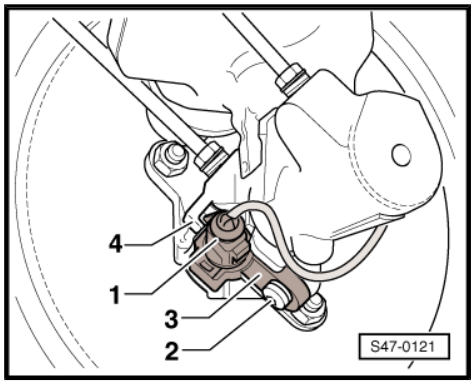
### Brake light switch -F-

Fitting location: Brake light switch -F- is located on the foot controls above the brake pedal.

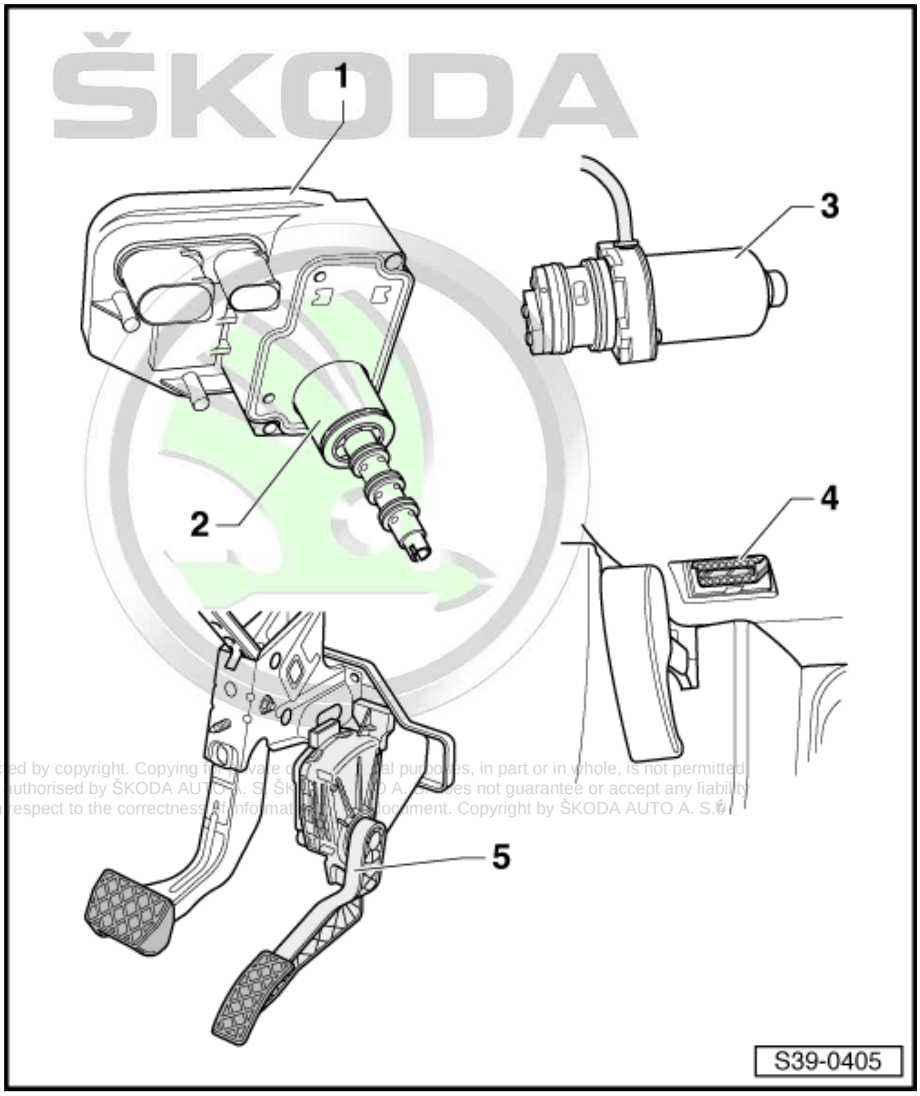


**Brake light switch -F- and brake pedal switch -F47-**

Fitting location: Brake light switch -F- and brake pedal switch -F47- are located on the master brake cylinder.




## 9.2 Electrical/electronic components and their fitting locations (final drive “0BR”)




**1 - Four-wheel drive control unit -J492-**

- ❑ Fitting location ⇒ page 267
- ❑ forms a single unit with the control valve for opening degree of coupling -N373- Pos. 2
- ❑ important signals from the engine control unit and the ABS control unit with EDL -J104- are transmitted via the databus to the four-wheel drive control unit

**2 - valve for control of the opening degree of the coupling -N373-**

**3 - Pump for Haldex coupling -V181-**

- ❑ Fitting location ⇒ page 269
- ❑ the pump can be inspected with ⇒ Vehicle diagnosis, testing and information system VAS 5051 in the operating mode “Targeted fault finding”
- ❑ removing and installing ⇒ page 279

**4 - Diagnostic connection**

- ❑ is located in the front left footwell, next to the front flap control lever

**5 - Accelerator pedal position sender -G79-**

- ❑ Fitting location ⇒ page 269

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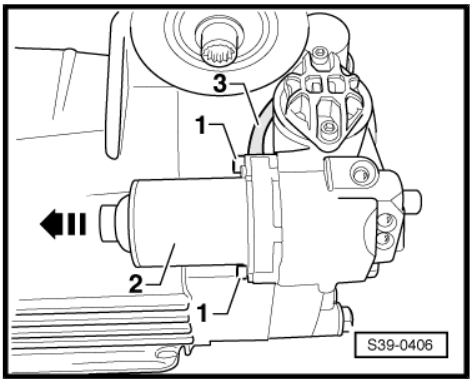
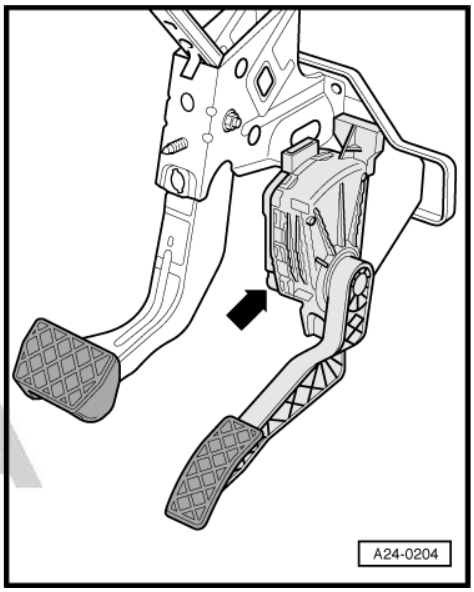
**Pump for Haldex coupling -V181-**

Fitting location: The pump for Haldex coupling -2- is located on the rear final drive, in front (right) area.




**Accelerator pedal position sender -G79-**

Fitting location: The accelerator pedal position sender -G79- -arrow- is located on the foot controls.




## 9.3 Summary of components - Four-wheel drive control unit -J492- (final drive “02D/0AV”)

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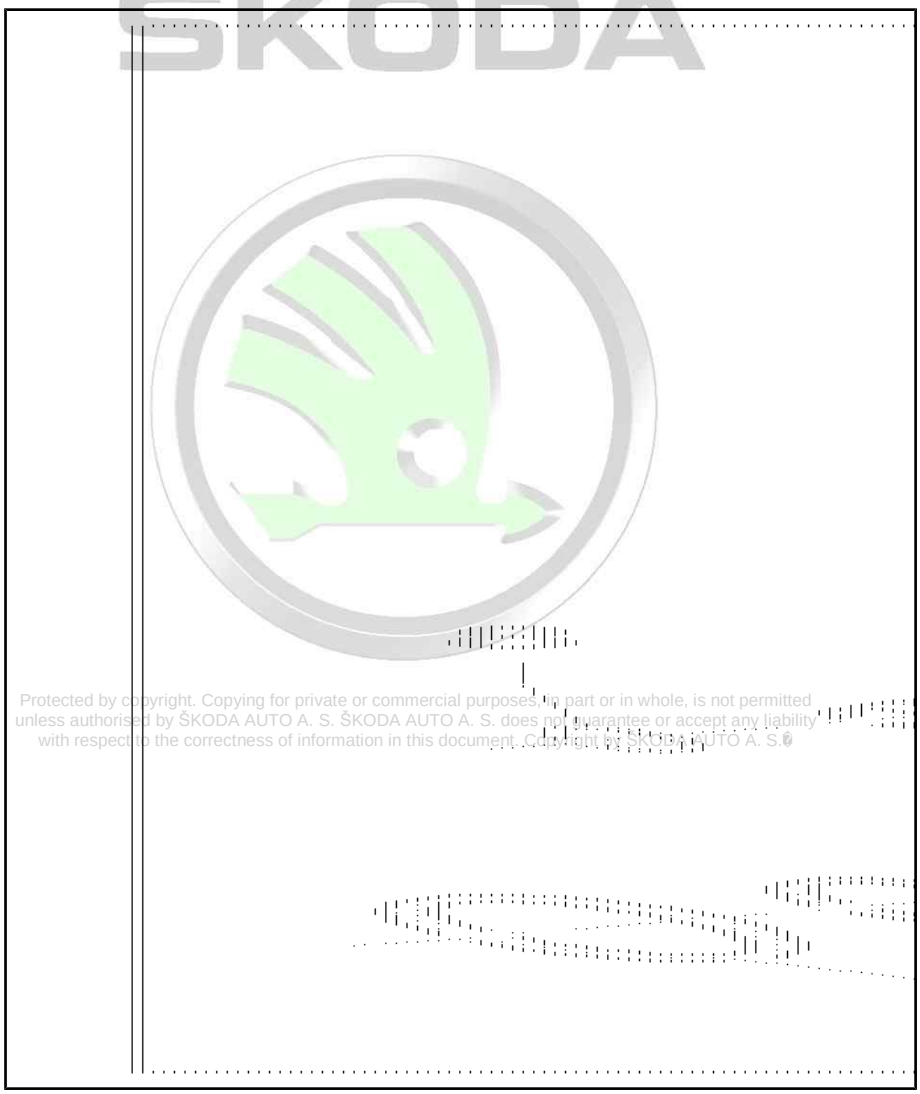

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**1 - Four-wheel drive control unit -J492 -**

- ❑ is calibrated with the valve for control of the opening degree of the coupling -N373- pos. 4
- ❑ always replace together with the valve for control of the opening degree of the coupling -N373- pos. 4
- ❑ removing and installing ⇒ page 272

**2 - 6 Nm**

**3 - Cover**

- ❑ with vulcanized gasket
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**4 - valve for control of the opening degree of the coupling -N373-**

- ❑ is calibrated with the four-wheel drive control unit -J492-
- ❑ always replace together with the four-wheel drive control unit -J492- Pos. 1

**5 - Sealing ring**

- ❑ Diameter 12 mm
- ❑ for valve for control of the opening degree of the coupling -N373-
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**6 - Sealing ring**

- ❑ Diameter 11 mm
- ❑ for valve for control of the opening degree of the coupling -N373-
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**7 - Sealing ring**

- ❑ in the housing of the Haldex coupling
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**8 - Sealing ring**

- ❑ for pressure sensor
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**9 - Pressure sensor**

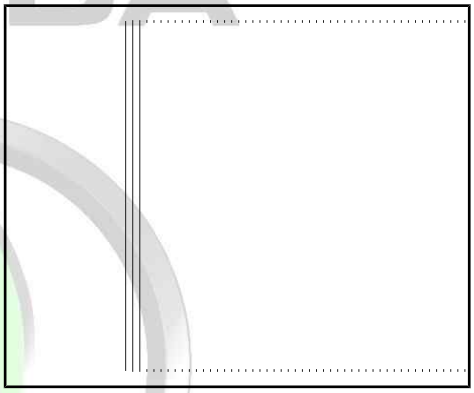
- ❑ can be re-used when replacing the control unit

**10 - Disc spring**

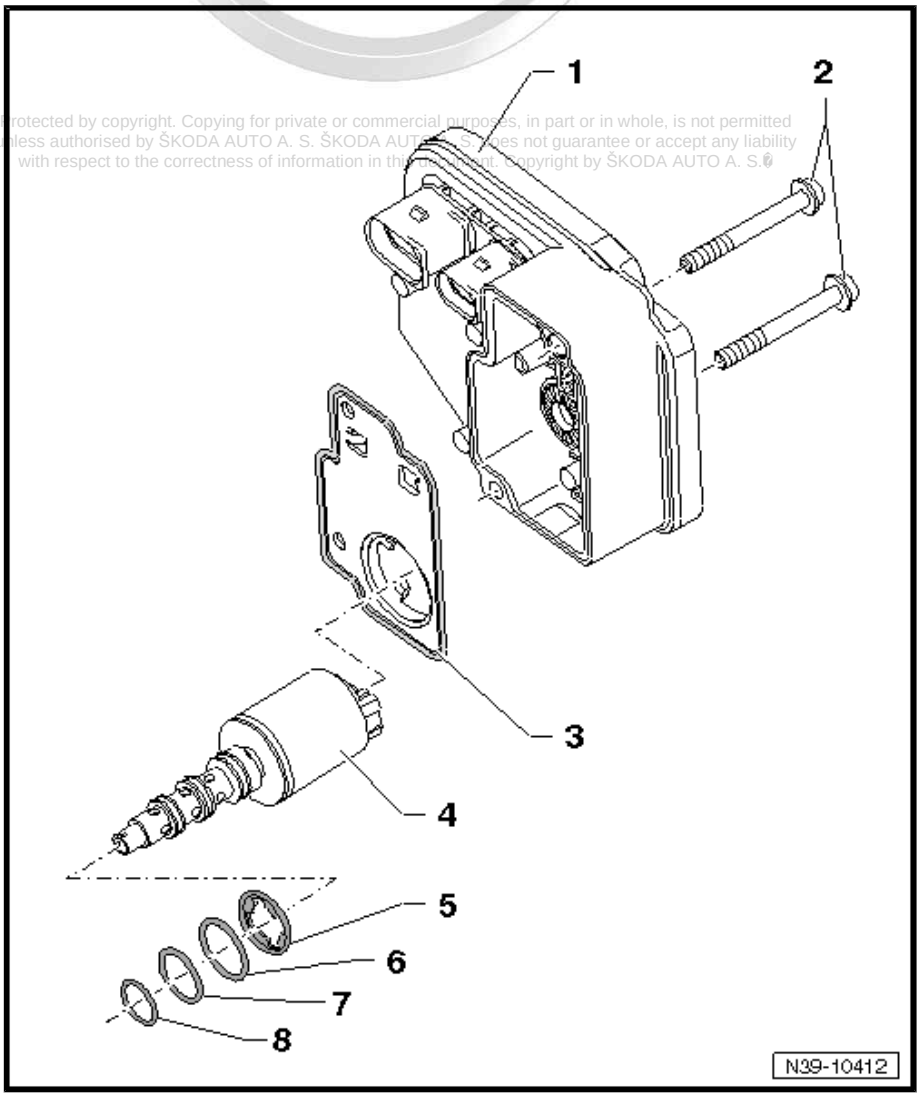
- ❑ Fitting position ⇒ page 271

**Fitting position of the disc spring**

The marking -arrow- on the curved side of the disc spring -2- points in the fitting position upwards and towards the pressure sensor -1-.



## 9.4 Summary of components - Four-wheel drive control unit -J492- (final drive "0BR")




**1 - Four-wheel drive control unit -J492-**

- ❑ is calibrated with the valve for control of the opening degree of the coupling -N373- pos. 4
- ❑ always replace together with the valve for control of the opening degree of the coupling -N373- pos. 4
- ❑ removing and installing ⇒ page 272

**2 - 6 Nm**

**3 - Cover**

- ❑ with vulcanized gasket
- ❑ remains glued on the control unit or on the housing of the Haldex coupling during removal
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**4 - valve for control of the opening degree of the coupling -N373-**

- ❑ is calibrated with the four-wheel drive control unit -J492-
- ❑ always replace together with the four-wheel drive control unit -J492- Pos. 1
- ❑ removing and installing ⇒ page 272

**5 - Sealing ring**

- ❑ pay attention to correct fit of the centering lips in the groove
- ❑ for valve for control of the opening degree of the coupling -N373-
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

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**6 - Sealing ring**

- ❑ Inner diameter 12 mm
- ❑ for valve for control of the opening degree of the coupling -N373-
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**7 - Sealing ring**

- ❑ Inner diameter 11 mm
- ❑ for valve for control of the opening degree of the coupling -N373-
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**8 - Sealing ring**

- ❑ Inner diameter 10 mm
- ❑ for valve for control of the opening degree of the coupling -N373-
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

## 9.5 Removing and installing the four-wheel drive control unit -J492- (final drive “02D/0AV”)

**Special tools and workshop equipment required**

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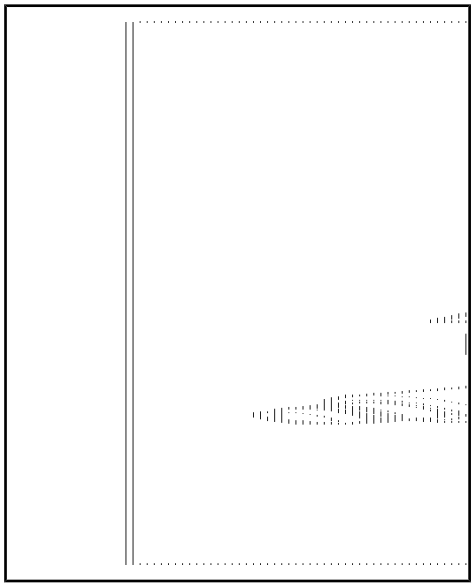
- ♦ Catch pan

### 9.5.1 Removing

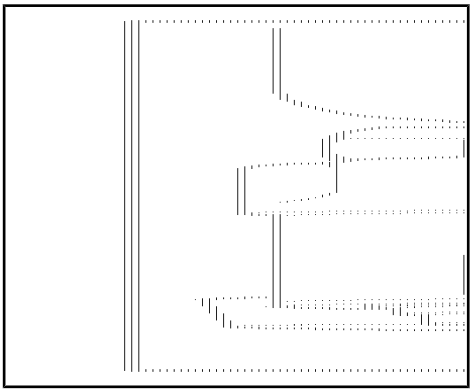
**Note**

*When removing the control unit -1-, the cover -2- and the disc spring -5- are removed together. The pressure sensor -4- and the valve -3- are removed separately.*

– Switch off ignition.



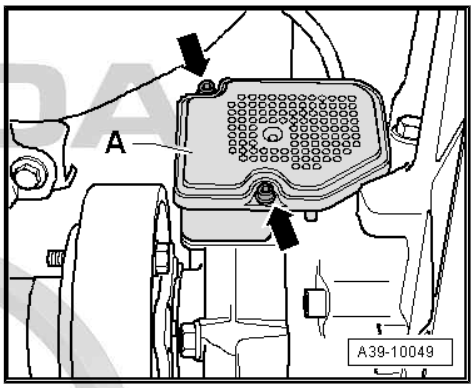
– Separate plug connections -1- and -2- at the top of the control unit.
– Place catch pan under the final drive.



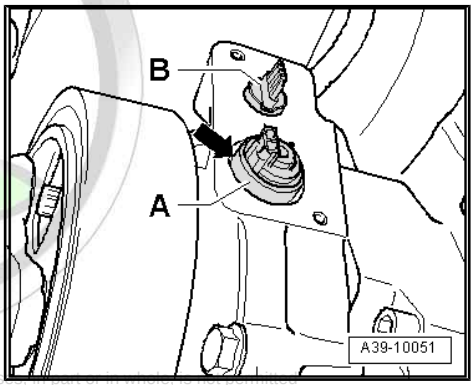
– Release screws -arrows-.

Ensure that no parts fall down when removing the control unit.

– Carefully remove the control unit -A-.




– Carefully grasp the valve for control of opening degree of coupling -N373- -A- at the metal housing -arrow- using pliers and pull out.
– Pull out pressure sensor -B-.

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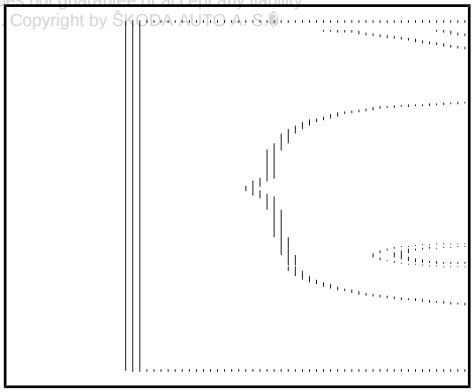
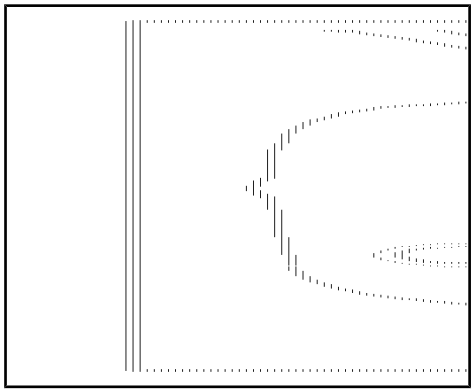
– Take gasket ring for control valve of opening degree of coupling -N373- -arrow- out of the housing.



## 9.5.2 Install

Installation is performed in the reverse order, pay attention to the following points:

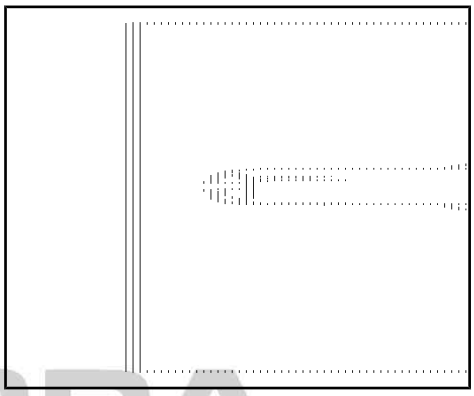
– Moisten new gasket ring for control valve of opening degree of coupling -N373- -arrow- with high efficiency oil for Haldex coupling and insert into the housing.



– Replace gasket rings -1- and -2- ⇒ Electronic Catalogue of Original Parts .

Pay attention to the different diameters:

- Inside diameter of gasket ring -1- is 11 mm
- Inside diameter of gasket ring -2- is 12 mm

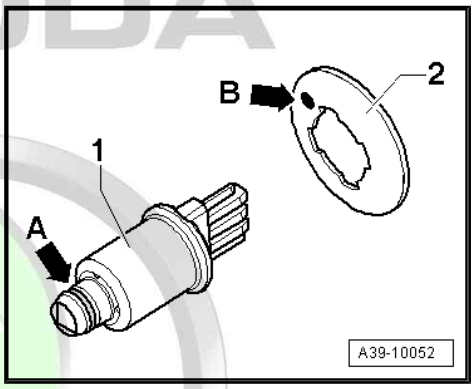


– Replace gasket ring -arrow A- at pressure sensor.

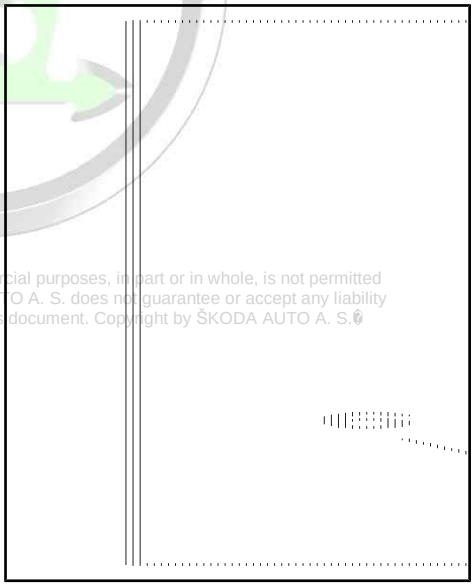
**Note**

*The marking -arrow B- on the curved side of the disc spring -2- points in the fitting position upwards and towards the pressure sensor -1-.*

– Fit disc spring -2- with the curved side onto the pressure sensor -1-.




– Fit new cover -5- onto the control unit -6-.
– Insert pressure sensor -4- with disc spring into the new cover -5- and press onto the plug connection. The curved side of the disc spring points towards the pressure sensor.
– Coat new gasket ring from pressure sensor -4- with high efficiency oil for Haldex coupling .
– Insert valve -1- into the new cover -5- and the control unit -6-. Press valve -1- onto the plug connection.
– Coat new gasket rings -2- and -3- with high efficiency oil for Haldex coupling .



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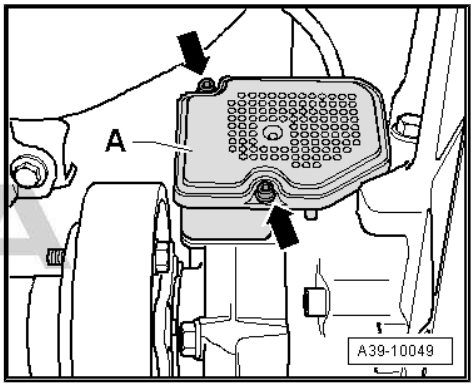
– Carefully fit on control unit -A- and tighten screws -arrows- to tightening torque.
– Check oil level in the Haldex coupling ⇒ page 300




**Tightening torque**

| Component | Nm |
|---|---|
| Four-wheel drive control unit -J492- | ⇒ Item 1 (page 270) |

## 9.6 Removing and installing the four-wheel drive control unit -J492- (final drive "0BR")

**Special tools and workshop equipment required**

♦ Catch pan

### 9.6.1 Removing

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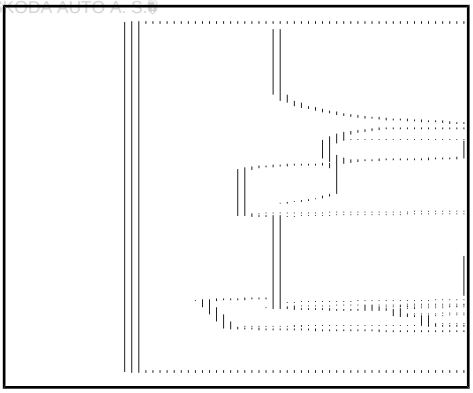
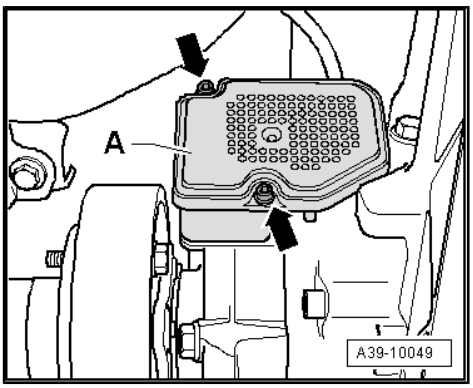
– Switch off ignition.
– Separate plug connections -1- and -2- at the top of the control unit.
– Place catch pan under the final drive.



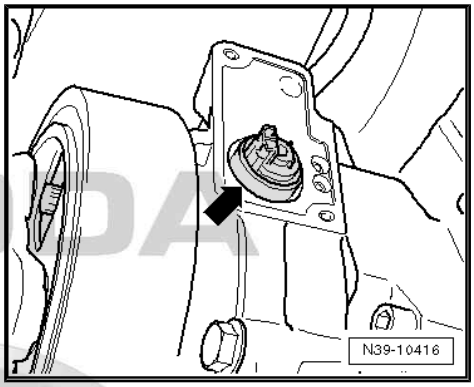
– Release screws -arrows-.

Ensure that no parts fall down when removing the control unit.

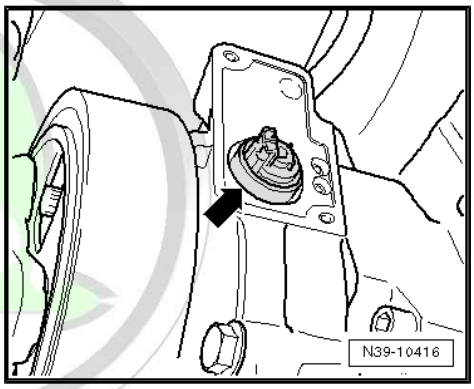
– Carefully remove the control unit -A-.



– If necessary remove the cover ⇒ Item 3 (page 271) from the housing of the Haldex coupling, while doing so hold the valve -arrow-.




– Cover the control valve for opening degree of coupling -N373- -arrow- with a cloth. Carefully grip the valve body -arrow- with pliers and pull out the valve.




## 9.6.2 Install

Installation is performed in the reverse order, pay attention to the following points:

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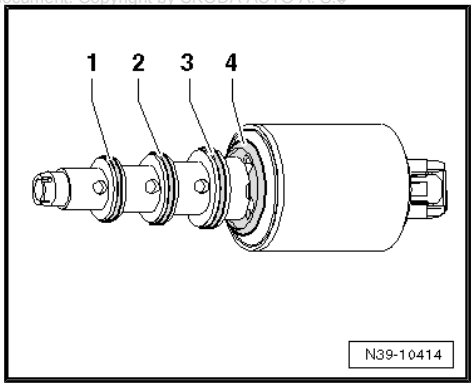
– Replace gasket rings -1...4- ⇒ Electronic Catalogue of Original Parts .



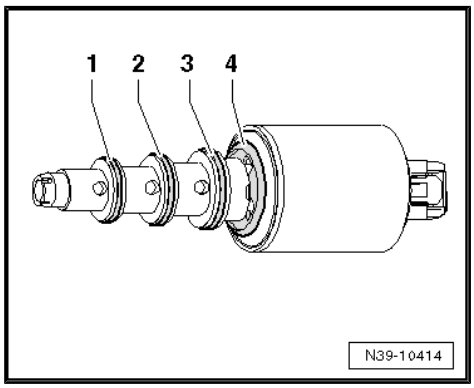

**Note**

*The valve gasket rings have different inner diameters.*

- Inside diameter of gasket ring -1- is 10 mm
- Inside diameter of gasket ring -2- is 11 mm
- Inside diameter of gasket ring -3- is 12 mm
- Gasket ring at valve body -4-

– First moisten the gasket ring -1- with high efficiency oil for Haldex coupling and position onto the control valve for opening degree of coupling -N373- .

Then mount the gasket rings -2…4-.




**Note**

*Press the centering lips (4 pieces) of the gasket ring -4- into the groove on the valve.*

– Fit new cover -2- onto the control unit -1-.

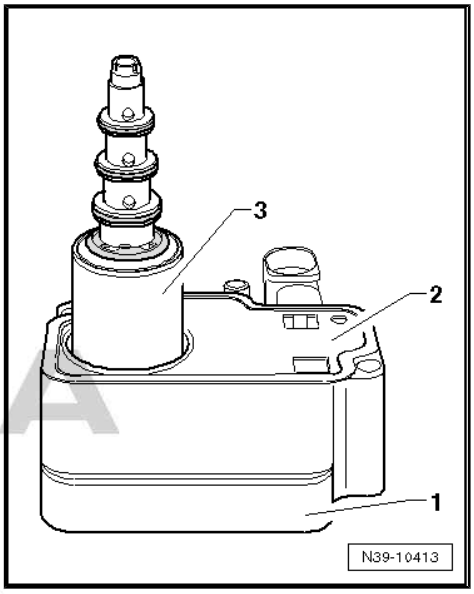
**Note**

*The cover only fits in one position.*

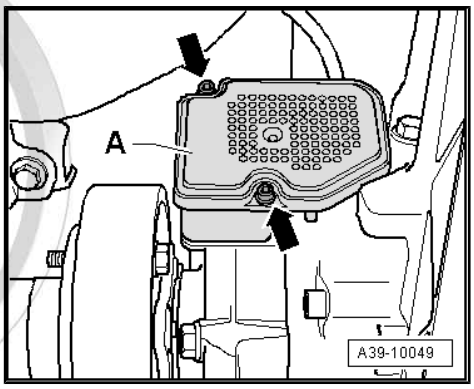
– Insert the control valve for opening degree of coupling -N373- into the control unit -1-.

**Note**

*The valve only fits in one position.*




– Carefully fit on control unit -A- and tighten screws -arrows- to tightening torque.
– Check oil level in the Haldex coupling ⇒ page 300




**Tightening torque**

| Component | Nm |
|---|---|
| Four-wheel drive control unit -J492- | ⇒ Item 2 (page 271) |

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## 9.7 Removing and installing the pump for Haldex coupling (final drive “02D/0AV”)

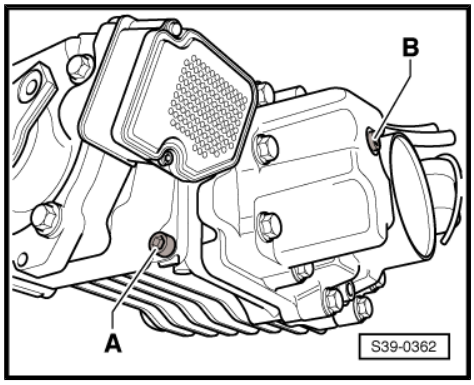
**Special tools and workshop equipment required**

♦ Catch pan

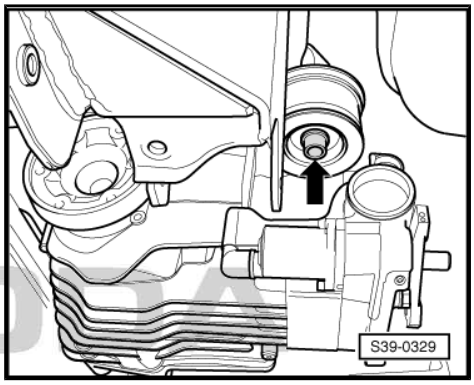
### 9.7.1 Removing

– Switch off ignition.
– Place catch pan under the final drive.

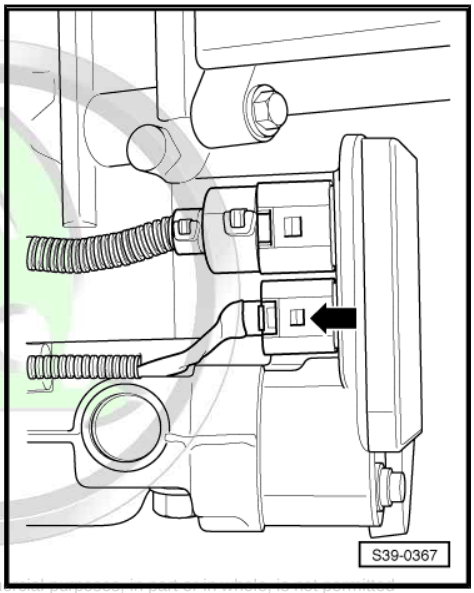
– Release oil check screw -B-.
– Unscrew oil drain plug -A- and completely drain high efficiency oil for Haldex coupling .
– Screw in oil drain plug -A- using a new gasket ring and tighten to 30 Nm.




– Slightly lower the final drive, to do so the fixing screw must be released by approx. 7 turns at the front bracket of the final drive.




– Disconnect plug -arrow- for the pump from the control unit.

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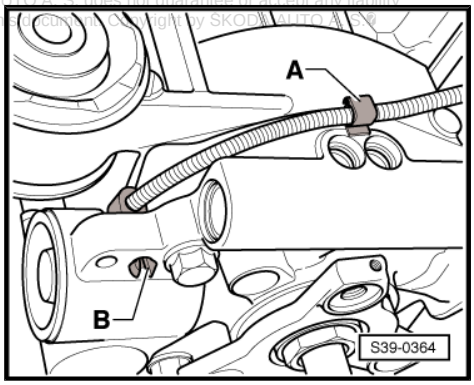
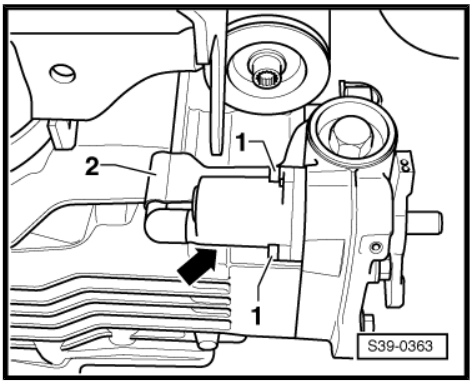
– Pull out wiring loom together with the holder -A- from the housing and expose.
– Compress catch pegs -B- and push as far as possible into the housing hole.



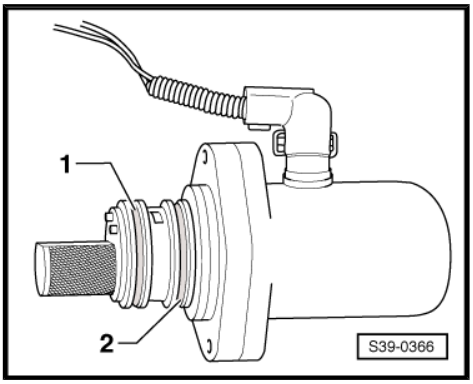
– Screw out the fixing screws of the pump -1-.
– Pull the pump -arrow- together with the cable protection -2- out of the housing for the Haldex coupling.




## 9.7.2 Install

Installation is performed in the reverse order, pay attention to the following points:

– Replace O-ring -1- and -2- ⇒ Electronic Catalogue of Original Parts .
– Coat O-rings -1- and -2- thinly with high efficiency oil for Haldex couplings .
– Fill up with high efficiency oil for Haldex coupling and check oil level in the Haldex coupling ⇒ page 300 .




**Tightening torques**

| Component | Nm |
|---|---|
| Pump to Haldex coupling | 6 |
| Oil check screw[2)] | 15 |
| Oil drain plug[2)] | 30 |
| Rear final drive to assembly carrier [1] | ⇒ Chassis ⇒ Rep. Gr. 42 |

[1)] Always replace screws ⇒ Electronic Catalogue of Original Parts .

[2)] Using a new gasket ring ⇒ Electronic Catalogue of Original Parts .

## 9.8 Removing and installing the pump for Haldex coupling (final drive “0BR”)

**Special tools and workshop equipment required**

♦ Catch pan

## 9.8.1 Removing

– Switch off ignition.
– Place catch pan under the final drive.

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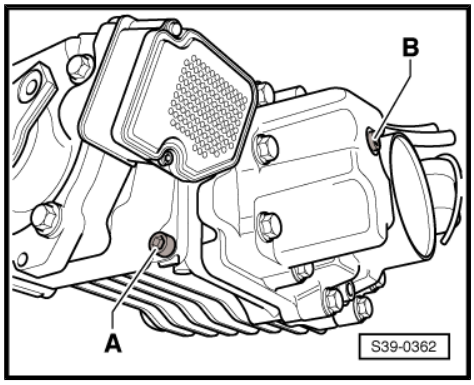
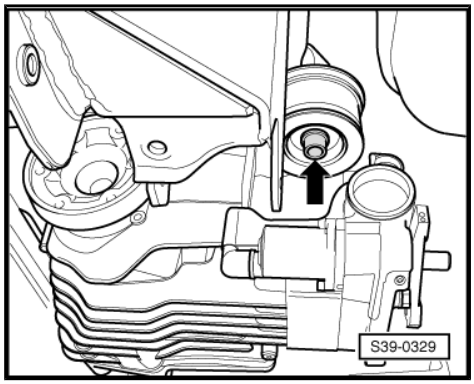
– Release oil check screw -B-.
– Unscrew oil drain plug -A- and completely drain high efficiency oil for Haldex coupling .
– Screw in new oil drain plug -A- and tighten to the prescribed tightening torque.




– Slightly lower the final drive, to do so the fixing screw -arrow- must be released by approx. 5 turns at the front bracket of the final drive.




– Disconnect plug -arrow- for the pump from the control unit.

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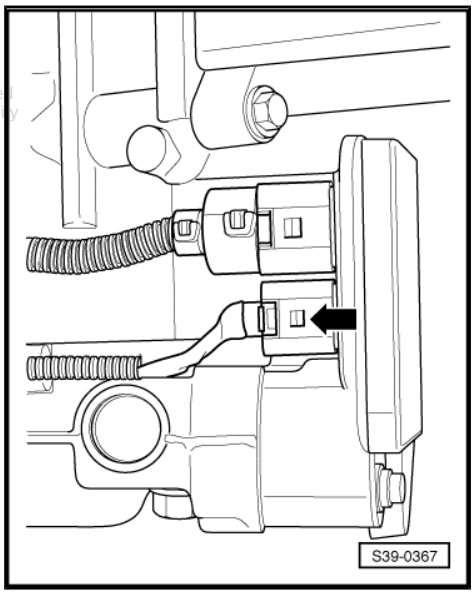
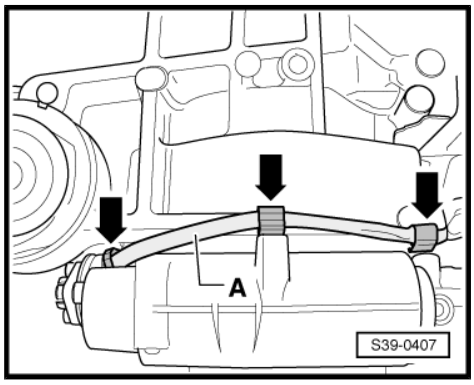
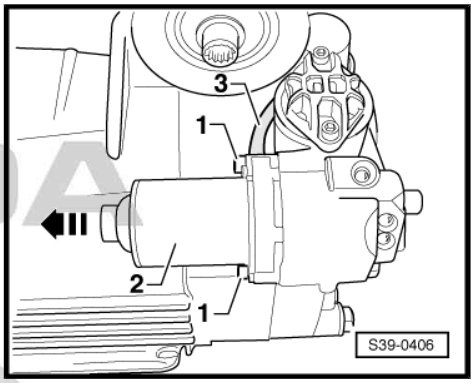



– Unclip the wiring loom -A- from the holders -arrows- and expose.



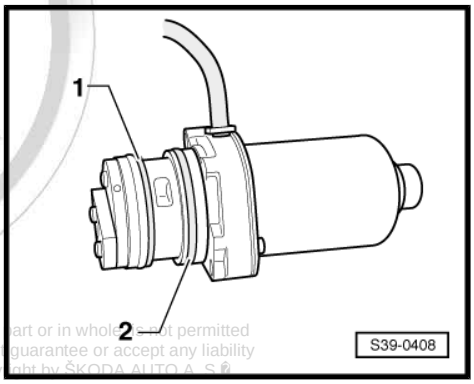
– Screw out the fixing screws -1- of the pump for Haldex coupling -V181- -2-.
– Pull the pump for Haldex coupling -V181- out of the housing for the Haldex coupling in -direction of arrow-, to do so guide through the wiring loom -3-.




## 9.8.2 Install

Installation is performed in the reverse order, pay attention to the following points:

– Replace O-ring -1- and -2- ⇒ Electronic Catalogue of Original Parts .
– Coat O-rings -1- and -2- thinly with high efficiency oil for Haldex coupling .
– Fill up with high efficiency oil for Haldex coupling and check oil level in the Haldex coupling ⇒ page 300 .

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**Tightening torques**

| Component | Nm |
|---|---|
| Pump to Haldex coupling | 6 |
| Oil check screw[2)] | 15 |
| Oil drain plug[2)] | 30 |
| Rear final drive to assembly carrier[1] | ⇒ Chassis ⇒ Rep. Gr. 42 |

[1)] Always replace screws ⇒ Electronic Catalogue of Original Parts .

[2)] Replace screw with sealing ring ⇒ Electronic Catalogue of Original Parts .

# 10 Removing and installing Haldex coupling

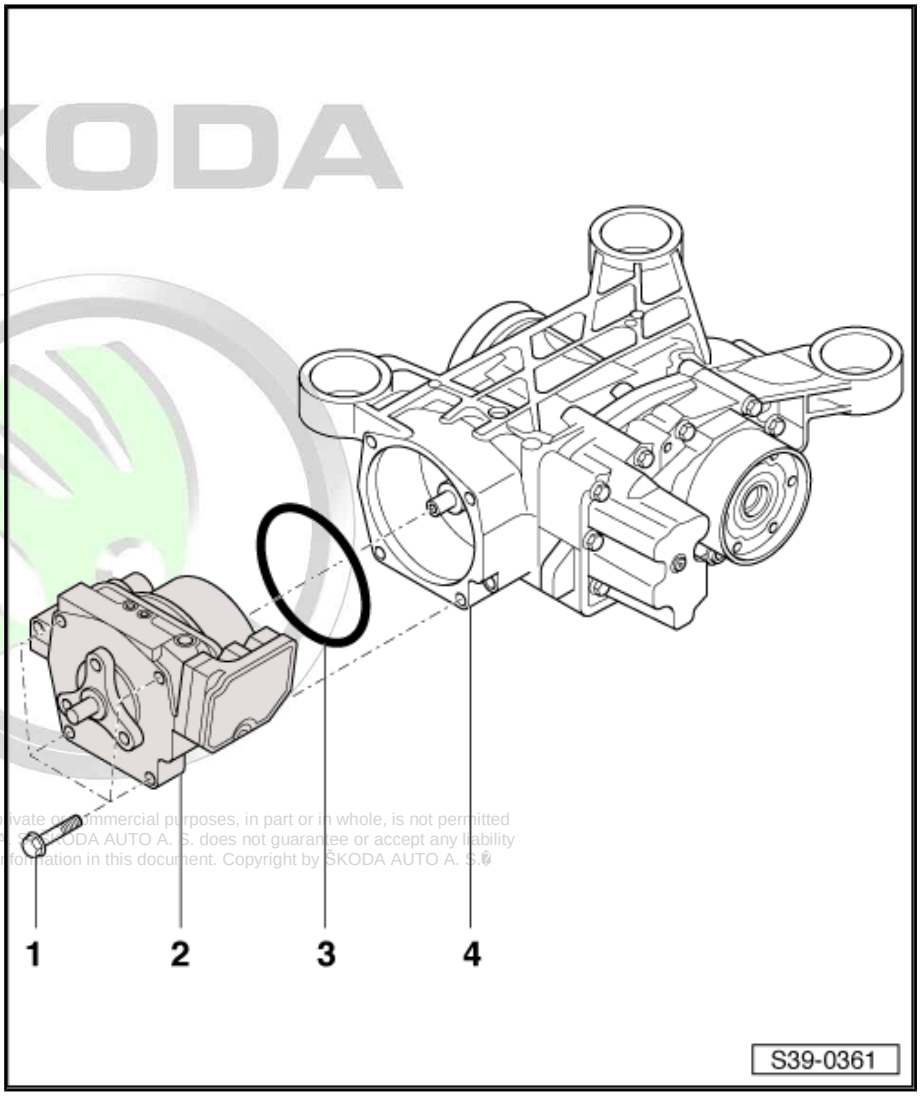
## 10.1 Summary of components - Haldex coupling (final drive “02D/0AV”)

**1 - 50 Nm**
- ❑ 4 pieces

**2 - Haldex coupling**
- ❑ with control unit
- ❑ removing and installing ⇒ page 283

**3 - O-ring**
- ❑ removing and installing ⇒ page 283
- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ insert with high efficiency oil for Haldex coupling
- ❑ Oil specification ⇒ Electronic Catalogue of Original Parts

**4 - Final drive**
- ❑ removing and installing ⇒ page 240

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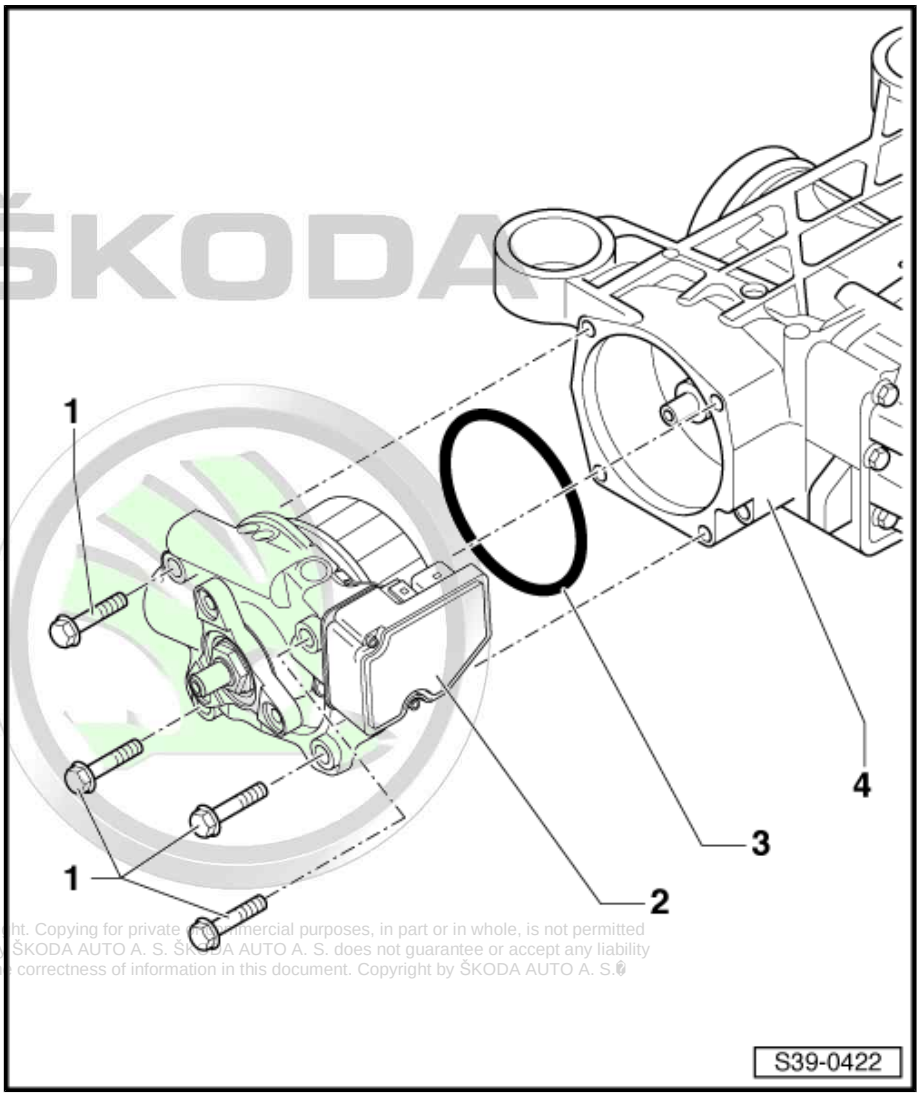
## 10.2 Summary of components - Haldex coupling (final drive “0BR”)

**1 - 50 Nm**
- ❑ 4 pieces

**2 - Haldex coupling**
- ❑ with control unit
- ❑ removing and installing ⇒ page 283

**3 - O-ring**
- ❑ removing and installing ⇒ page 283
- ❑ always replace ⇒ Electronic Catalogue of Original Parts
- ❑ insert with high efficiency oil for Haldex coupling
- ❑ Oil specification ⇒ Electronic Catalogue of Original Parts

**4 - Final drive**
- ❑ removing and installing ⇒ page 240

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## 10.3 Removing and installing Haldex coupling (final drive installed)

**Special tools and workshop equipment required**

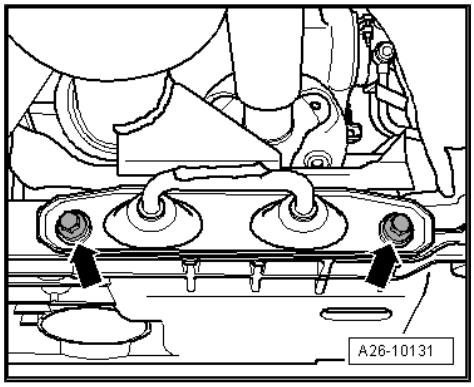
- ♦ Guide bars -T10093-
- ♦ Engine and gearbox jack e.g. -V.A.G 1383A-
- ♦ Catch pan

### 10.3.1 Removing

– Raise vehicle.

– Separate exhaust system at the clamping sleeve and remove bracket for the exhaust system from the assembly carrier ⇒ Engine ⇒ Rep. Gr. 26 .

– Tie up pre-exhaust pipe.



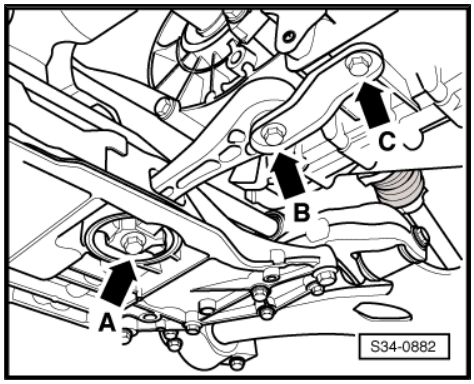

**Note**

*The decoupling elements in the exhaust pipe should not be bent by more than 10° - risk of damage.*

– Remove the rear part of the exhaust system as from the clamping sleeve ⇒ Engine ⇒ Rep. Gr. 26 .

– Remove the heat shield below the propshaft.

– Unscrew screws -arrow B- and -arrow C- and remove pendulum support from gearbox.




**Note**

*Do not release screw -arrow A-.*

– Slacken the intermediate bearing of the propshaft from the body by approx. 4 turns -arrows-.

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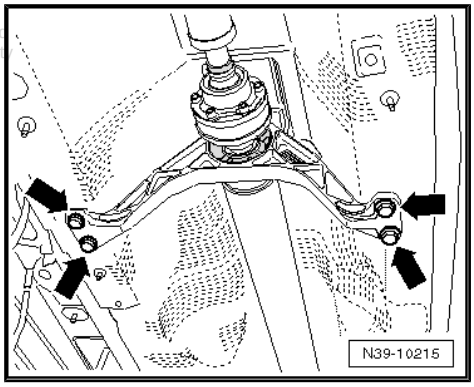
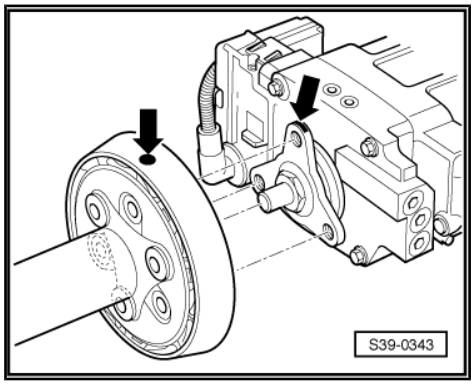


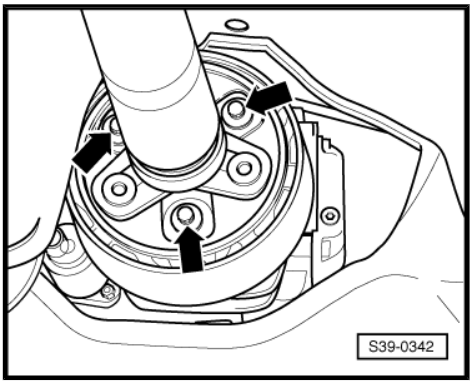

**Vehicles with rear final drive “02D/0AV”**

– Check, if a marking (colour point) is present on the flexible disk/oscillation damper and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.

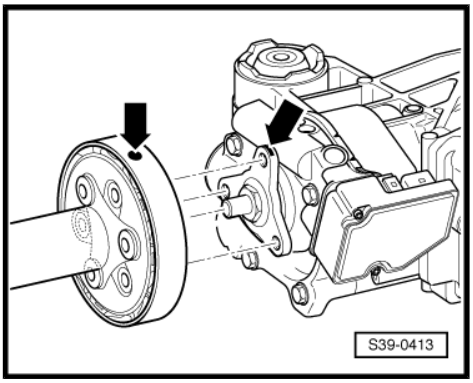


– Unscrew propshaft with flexible disk and oscillation damper from rear final drive -arrows-.

**Vehicles with rear final drive “0BR”**

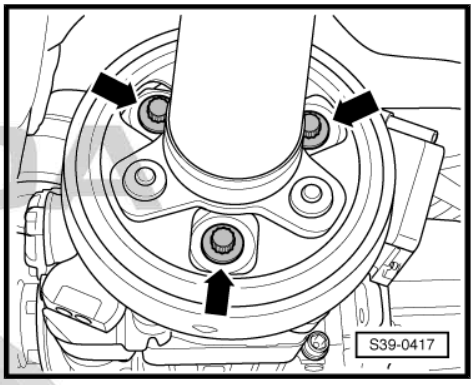



– Check, if a marking (colour point) is present on the flexible disk/oscillation damper and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.

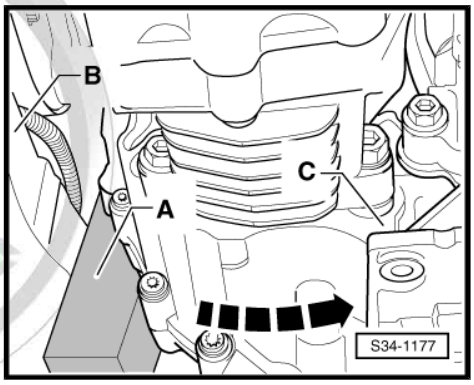



– Unscrew propshaft with flexible disk and oscillation damper from rear final drive -arrows-.

**Continued for all vehicles**




– Push the engine/gearbox unit to the front with a 2nd mechanic in -direction of arrow- and insert a suitable wooden wedge -A- (approx. 50 mm thick) between the assembly carrier -B- and the gearbox -C-.
– While doing so, remove the propshaft from the flange at the Haldex coupling (centering stud) on the rear final drive.

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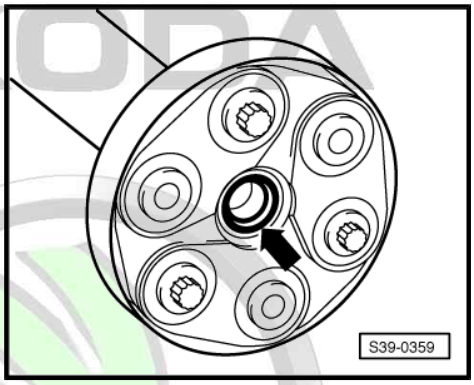
**Note**

*Do not tilt propshaft when removing, pull off horizontally from centering stud of rear final drive. Gasket ring/centering bushing -arrow- must not be damaged, otherwise the propshaft has to be replaced.*

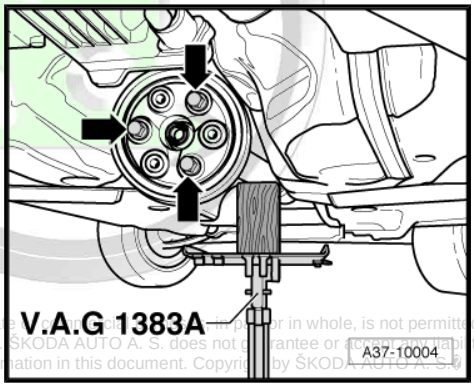



– Support propshaft with Engine and gearbox jack , e.g. -V.A.G 1383A - .

**Vehicles - “two-piece” propshaft**

– If necessary remove rear flexible disk with oscillation damper from the propshaft -arrows-.

**Vehicles - “one-piece” propshaft**

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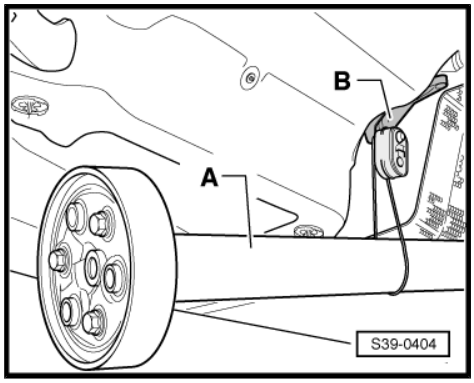
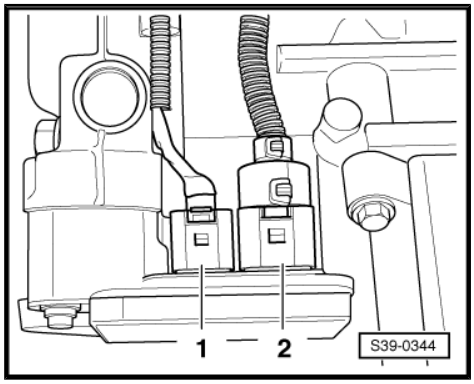
– Tie up the rear part of the propshaft -A- for the suspension -B- of the exhaust gas system.

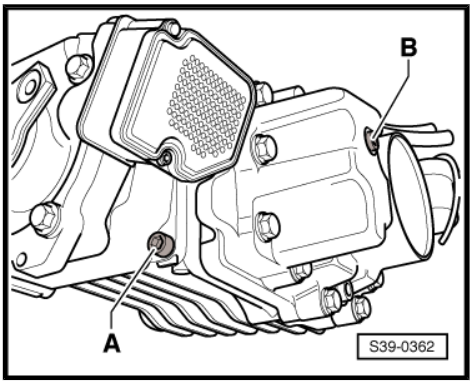
**Continued for all vehicles**




– Disconnect plug connection -2-.
– Place catch pan under the final drive.



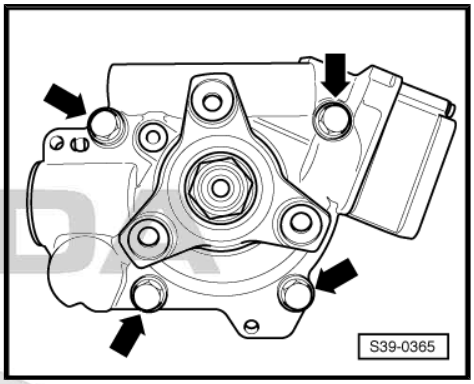
– Release oil check screw -B-.
– Unscrew oil drain plug -A- and completely drain high efficiency oil for Haldex coupling .
– Screw in oil drain plug -A- using a new gasket ring and tighten to tightening torque.



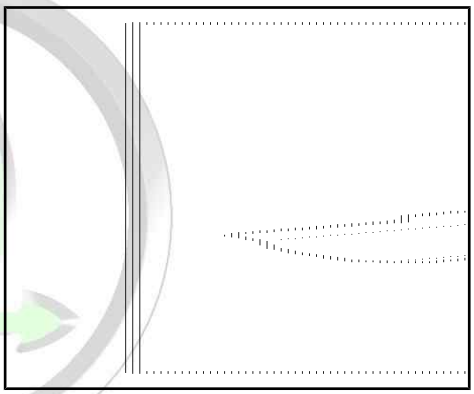

**Note**

*Screw in new oil drain plug -A- on the rear final drive "0BR" and tighten to tightening torque.*

– Release fixing screws -arrows- and pull Haldex coupling out of the rear final drive.




– Remove the previously installed O-ring -arrow- from the Haldex coupling.



## 10.3.2 Install

Installation is performed in the reverse order, pay attention to the following points:

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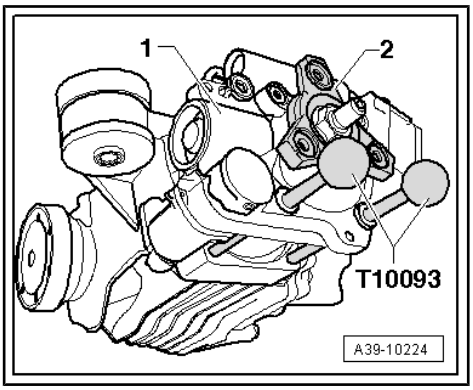
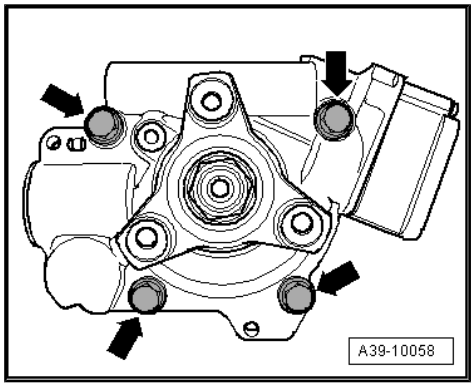
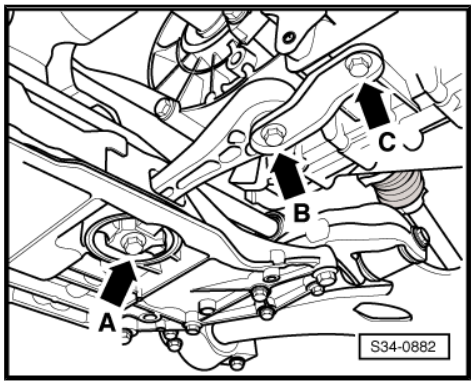
– Insert new O-ring and lightly oil with high efficiency oil for Haldex coupling ⇒ Item 3 (page 282) .
– Insert Haldex coupling -1- into the rear final drive. Screw in guide bars -T10093- for precise guidance.
– Turn at flange/propshaft -2- and insert Haldex coupling up to the stop.



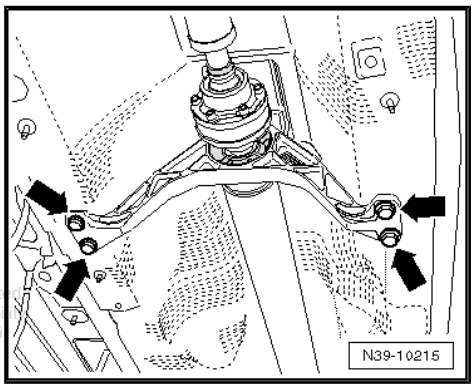
– Unscrew guide bars -T10093- and tighten screws -arrows- to specified tightening torque.
– Install propshaft at rear final drive ⇒ page 223 .




– Tighten the pendulum support with “new” screws -arrows B and C- at the gearbox. Tightening torques ⇒ engine ⇒ Rep. Gr. 10 .




– Align intermediate bearing free of stress and tighten to tightening torque ⇒ page 233 .
– Install the heat shield below the propshaft.
– Install exhaust system and align free of stress ⇒ Engine ⇒ Rep. Gr. 26 .
– Fill up with high efficiency oil for Haldex coupling and check oil level in the Haldex coupling ⇒ page 300 .

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## Tightening torques

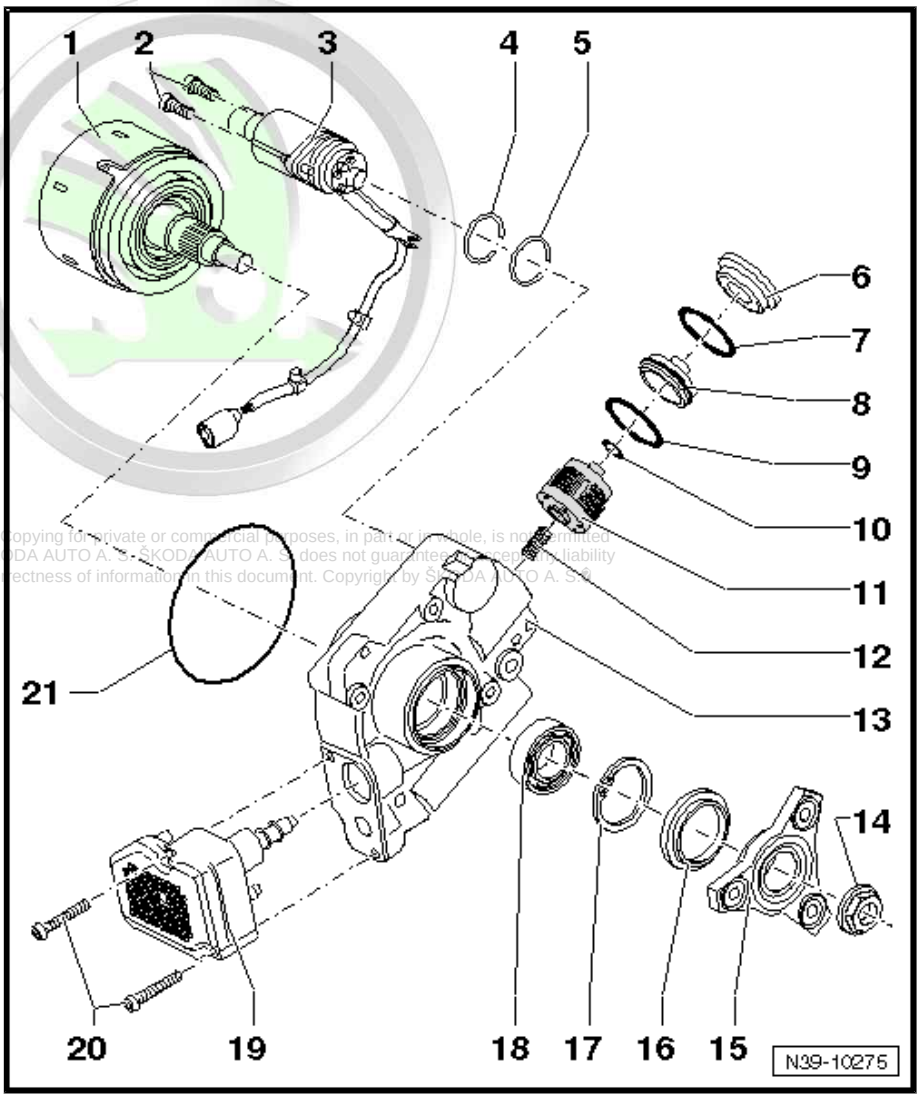
| Component | Nm |
|---|---|
| Oil check screw[1)] | 15 |
| Oil drain plug[1) 2)] | 30 |
| Flexible disk to propshaft | ⇒ page 233 |
| Propshaft to rear final drive | ⇒ page 233 |
| Haldex coupling to rear final drive | ⇒ Item 1 (page 282) |

1) Using a new gasket ring ⇒ Electronic Catalogue of Original Parts .

2) Replace oil drain plug on the rear final drive “0BR” ⇒ Electronic Catalogue of Original Parts .

# 11 Disassembling and assembling Haldex coupling

## 11.1 Summary of components - Disassembling and assembling “Haldex coupling of the 2nd generation” (final drive “02D/0AV”)




**1 - Plate clutch**

- ❑ Structure of the plate clutch ⇒ page 290
- ❑ removing and installing ⇒ page 292

**2 - 6 Nm**

**3 - Pump for Haldex coupling - V181-**

- ❑ removing and installing ⇒ page 277

**4 - O-ring**

- ❑ Diameter 32 mm
- ❑ for pump for Haldex coupling -V181-
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**5 - O-ring**

- ❑ Diameter 30 mm
- ❑ for pump for Haldex coupling -V181-
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**6 - Screw cap, 35 Nm**

**7 - O-ring**

- ❑ for cap
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**8 - Oil filter carrier**

**9 - O-ring**

- ❑ for oil filter carrier
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**10 - O-ring**

- ❑ for the oil filter
- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

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**11 - Oil filter**

- ❑ for Haldex coupling
- ❑ removing and installing ⇒ page 298

**12 - Spring**

**13 - housing for Haldex coupling**

- ❑ removing and installing complete Haldex coupling ⇒ page 282
- ❑ remove from plate clutch ⇒ page 292

**14 - Nut, 210 Nm**

- ❑ replace ⇒ Electronic Catalogue of Original Parts
- ❑ secure with locking agent -D 000 600-

**15 - Flange for propshaft**

- ❑ removing and installing ⇒ page 260

**16 - Gasket ring for flange/propshaft**

Replace ⇒ page 260

**17 - Circlip**

**18 - Ball bearing**

- ❑ removing and installing ⇒ page 292

**19 - Four-wheel drive control unit -J492-**

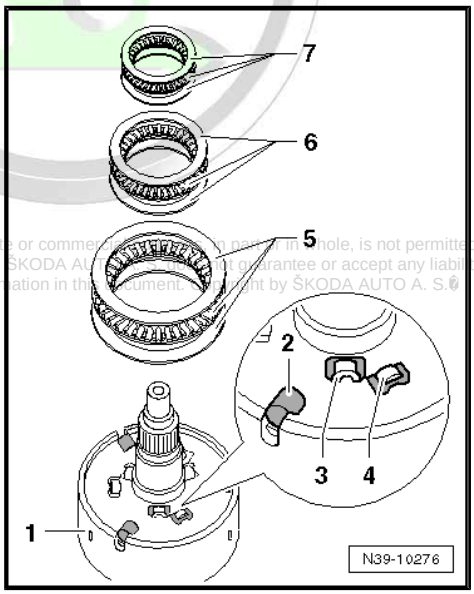
- ❑ with control valve of opening degree of coupling -N373-
- ❑ with oil level and oil temperature sender - G437-
- ❑ removing and installing ⇒ page 272

**20 - 6 Nm**

**21 - O-ring**

- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**Structure of the plate clutch**




1 - Plate clutch

Plates cannot be removed.

2 - Outer rollers

3 pieces

3 - Castors

3 pieces

Fitting position: Roller points to the outside.

4 - Castors

3 pieces

Fitting position: Roller points to the inside.

5 - Axial needle bearing

The thick washer points to the plate clutch -1-.

6 - Axial needle bearing

The thick washer points to the plate clutch -1-.

7 - Axial needle bearing

The thick washer points to the plate clutch -1-.

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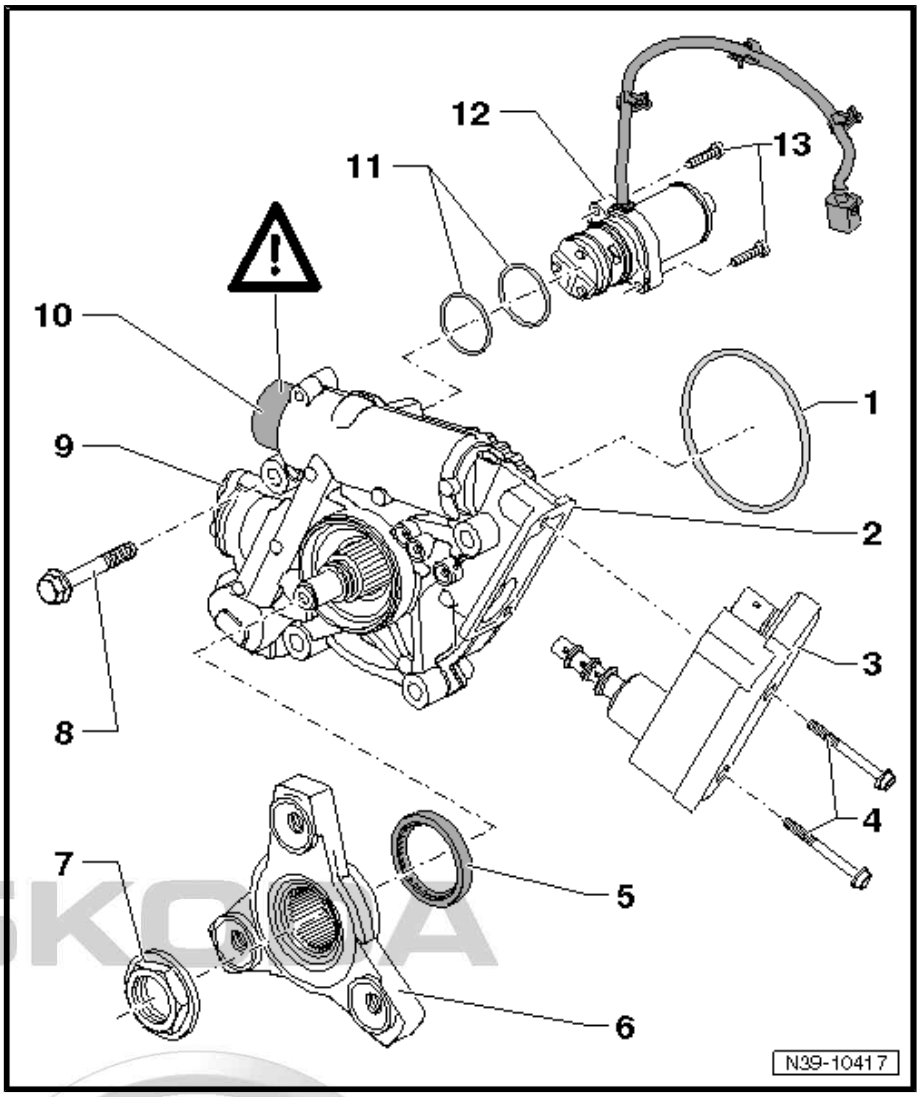
## 11.2 Summary of components - Disassembling and assembling “Haldex coupling of the 4th generation” (final drive “0BR”)




**1 - O-ring**

- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**2 - housing for Haldex coupling**

- ❑ Removing and installing Haldex coupling completely ⇒ page 283

**3 - Four-wheel drive control unit -J492-**

- ❑ with control valve of opening degree of coupling -N373-
- ❑ removing and installing ⇒ page 275

**4 - 6 Nm**

**5 - Gasket ring for flange of propshaft**

- ❑ removing and installing ⇒ page 260

**6 - Flange for propshaft**

- ❑ removing and installing ⇒ page 260

**7 - Nut, 210 Nm**

- ❑ replace ⇒ Electronic Catalogue of Original Parts
- ❑ secure with locking agent -D 000 600-

**8 - 50 Nm**

- ❑ 4 pieces
- ❑ for housing of Haldex coupling Pos. 2 to rear final drive

**9 - Cover**

- ❑ for oil filter housing
- ❑ Oil filter change not necessary

**10 - Cover**

- ❑ for pressure tank

**WARNING**

*The cover must never be opened, risk of injuries!*

**11 - O-ring**

- ❑ 2 pieces
- ❑ Diameter 34 mm
- ❑ for pump for Haldex coupling -V181-

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- ❑ moisten with high efficiency oil for Haldex coupling and insert
- ❑ always replace ⇒ Electronic Catalogue of Original Parts

**12 - Pump for Haldex coupling -V181-**

- ❑ removing and installing ⇒ page 279

**13 - 6 Nm**

## 11.3 Replacing grooved ball bearing for Haldex coupling (final drive “02D/0AV”)

**Special tools and workshop equipment required**

- ♦ Pressure plate -MP3-407 (VW 402)-
- ♦ Pressure spindle -MP3-408 (VW 412)-
- ♦ Pipe section -MP3-409 (VW 418 A)-
- ♦ Thrust piece -MP3-411 (VW 454)-
- ♦ Ejection lever -MP3-418 (VW 681)-
- ♦ Thrust piece -MP3-453 (VW 431)-
- ♦ Thrust piece -T10019-
- ♦ Assembly device -T10030-
- ♦ Tensioning strap -T10038-
- ♦ Counterholder -T30004 (3415)-
- ♦ Knock-in bushing -T30034 (41 - 501)-
- ♦ Pipe -T30055 (3296)-
- ♦ Engine and gearbox jack -V.A.G 1383 A-
- ♦ Extractor , e.g. -Kukko 12/1-
- ♦ Two-arm extractor , e.g. -Kukko 20/10-
- ♦ Catch pan
- ♦ Locking agent -D 000 600-
- ♦ Allan screw M8 x 15
- ♦ Bolt M10 x 25

### 11.3.1 Removing

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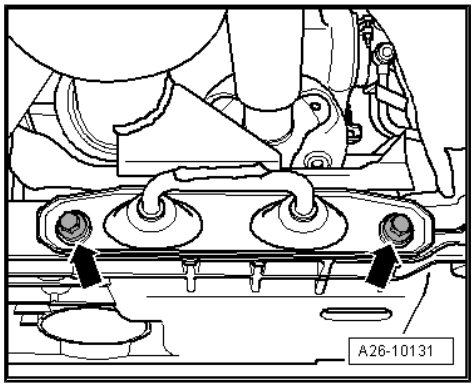
– Raise vehicle.

– Separate exhaust system at the clamping sleeve and remove bracket for the exhaust system from the assembly carrier ⇒ Engine ⇒ Rep. Gr. 26 .

– Tie up pre-exhaust pipe.



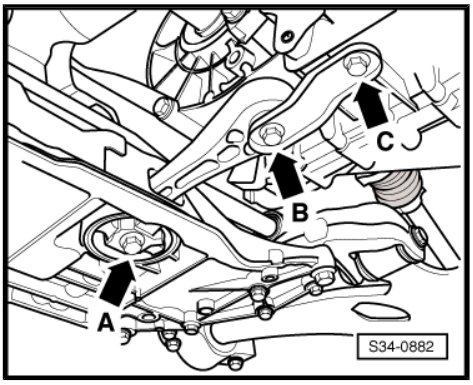

**Note**

*The decoupling elements in the exhaust pipe should not be bent by more than 10° - risk of damage.*

– Remove the rear part of the exhaust system as from the clamping sleeve ⇒ Engine ⇒ Rep. Gr. 26 .

– Remove the heat shield below the propshaft.

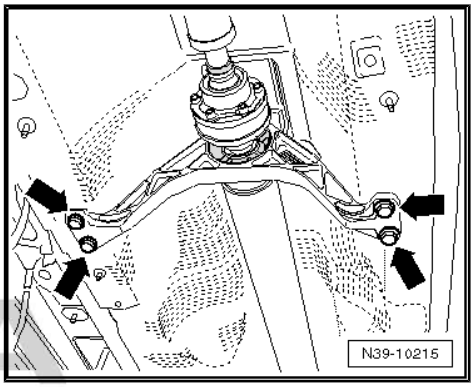
– Unscrew screws -arrow B- and -arrow C- and remove pendulum support from gearbox.



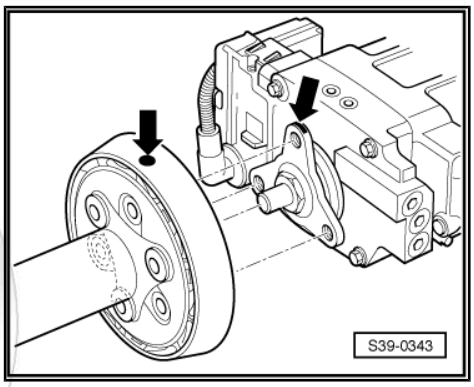

**Note**

*Do not release screw -arrow A-.*

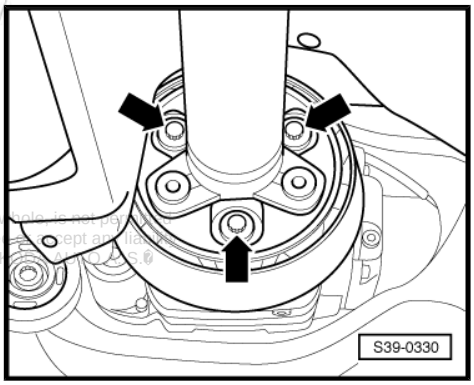
– Slacken the intermediate bearing of the propshaft from the body by approx. 4 turns -arrows-.




– Check, if a marking (colour point) is present on the flexible disk/oscillation damper and at the flange on the Haldex coupling -arrows-. If not, mark the position of the flexible disk and the flange on the Haldex coupling to each other -arrows-.




– Unscrew propshaft with flexible disk and oscillation damper from rear final drive -arrows-.

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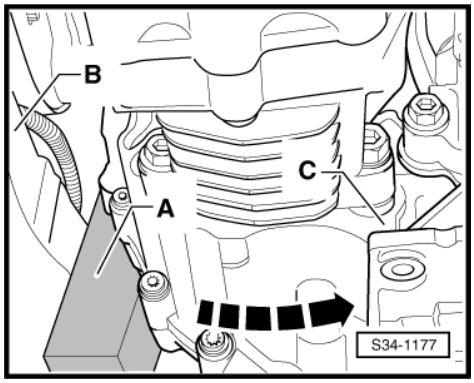
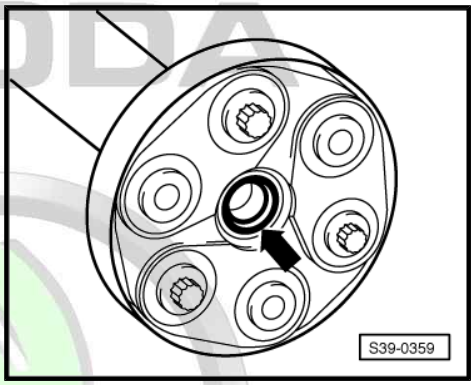
– Push the engine/gearbox unit to the front with a 2nd mechanic in -direction of arrow- and insert a suitable wooden wedge -A- (approx. 50 mm thick) between the assembly carrier -B- and the gearbox -C-.
– While doing so, remove the propshaft from the flange at the Haldex coupling (centering stud) on the rear final drive.




**Note**

*Do not tilt propshaft when removing, pull off horizontally from centering stud of final drive towards the rear. The gasket ring in the centering bush -arrow- must not be damaged, otherwise the propshaft must be replaced.*

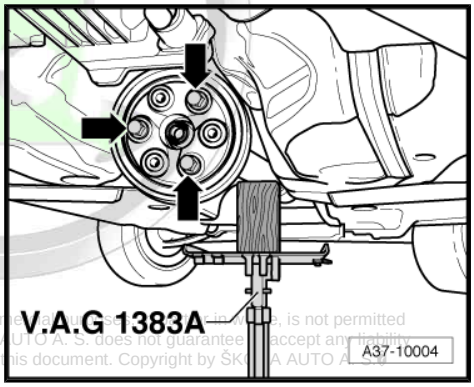



– Support propshaft.

**Vehicles - “two-piece” propshaft**

– If necessary remove flexible disk from the propshaft -arrows-.

**Continued for all vehicles**

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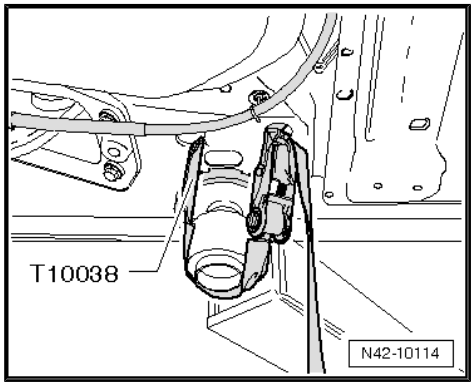
– Lash the vehicle securely to the lift platform using tensioning straps -T10038- .

**WARNING**

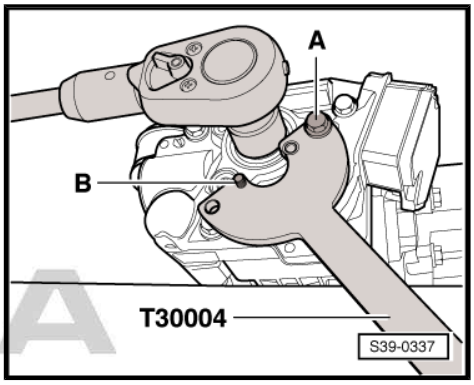
***If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.***



– Unscrew hexagon nut at flange of Haldex coupling.

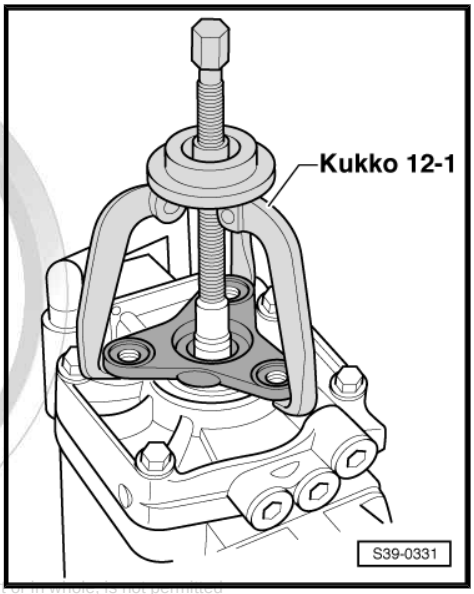
-A- Screw M10 x 25

-B- Allen screw M8 x 15 (is screwed in from the reverse side into the counterholder -T30004- )




– Disconnect flange for Haldex coupling. If there is any resistance, use three armed extractor , e.g. -Kukko 12/1- .

– Place a catch pan under the rear final drive.

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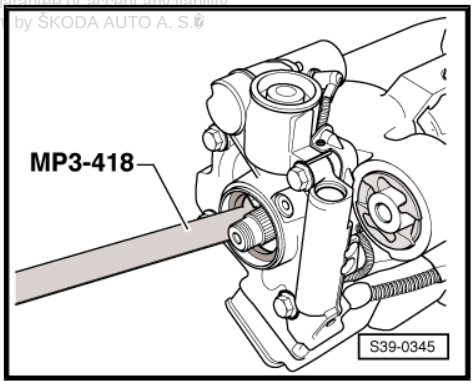
– Pull out gasket ring with ejection lever -MP3-418- .

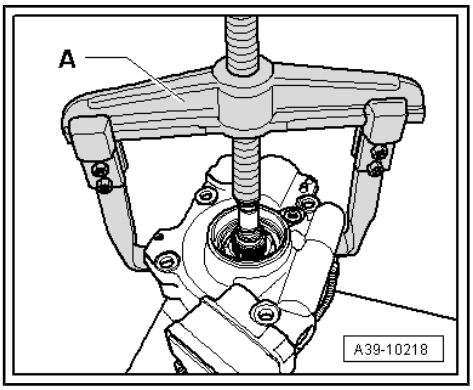



– Remove Haldex coupling ⇒ page 283 .

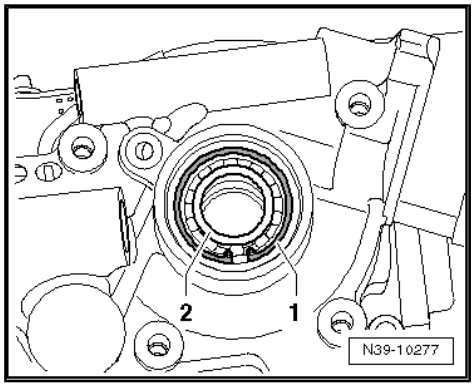
– Lay Haldex coupling onto a clean work bench.

– Remove housing for Haldex coupling.

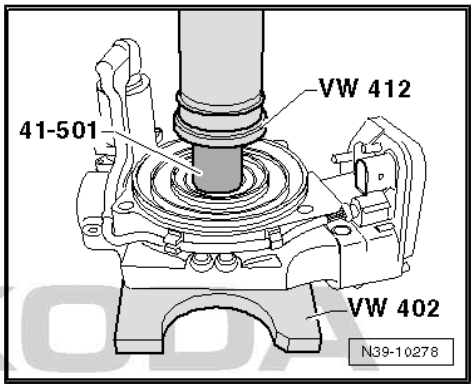
-A- Two-arm extractor , e.g. -Kukko 20/10-



– Install circlip -1- for grooved ball bearing -2-.

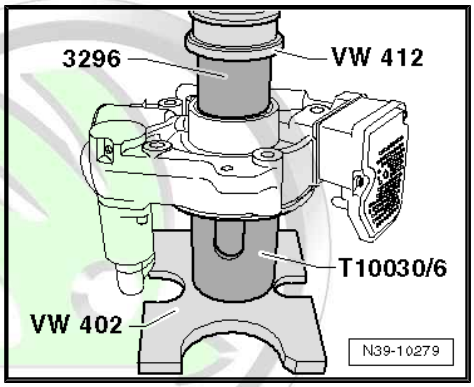



– Press out grooved ball bearing.

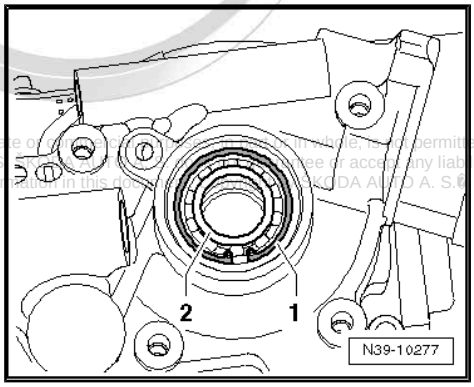



## 11.3.2 Install

– Press in new grooved ball bearing up to the stop.




– Insert circlip -1-.
– Warm up grooved ball bearing -2- e.g. with a hot-air blower to approx. 80°C.

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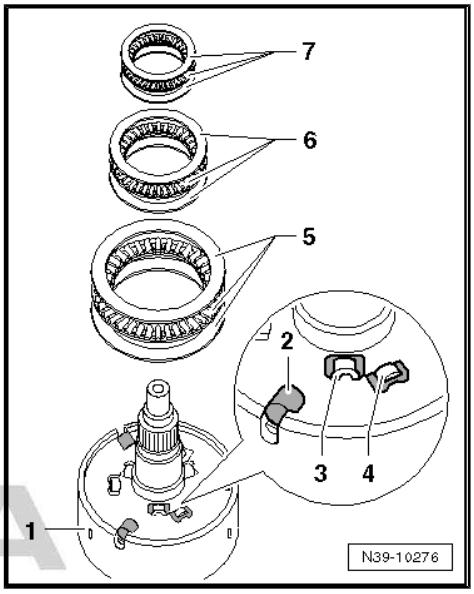
– Centre the axial needle bearing -5…7- in the middle onto the plate clutch -1-.
– Place the housing for the Haldex coupling onto the plate clutch -1- by hand.




**Note**

*The axial needle bearings -5…7- must not change their centered position when placing on the housing.*

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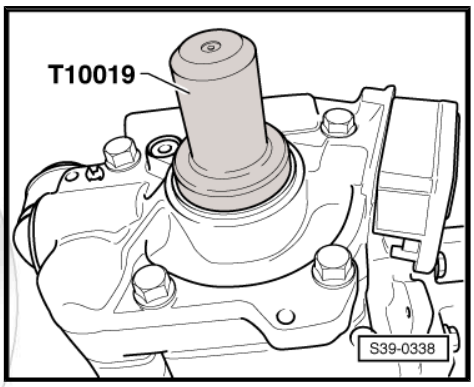
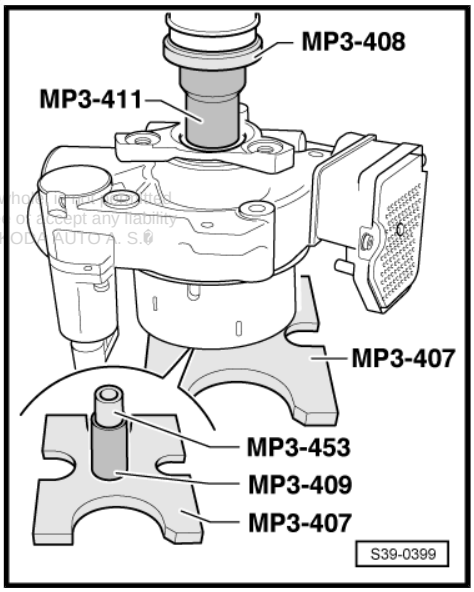
– Before installing, slightly oil new gasket ring on the outside diameter and between the sealing lips with high efficiency oil for Haldex coupling .
– Drive in new gasket ring with pressure plate -T10019- up to the stop. Do not tilt the gasket ring during this process.




– Press on flange/propshaft.

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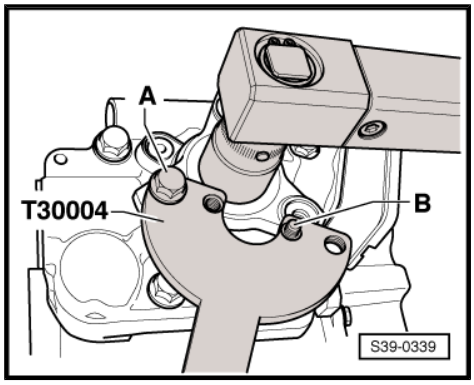
– Insert new hexagon nut with locking agent -D 000 600- and tighten. Tightening torque (final drive “02D/0AV” ⇒ Item 14 (page 290) ).

A - Hexagon screws M10 x 20

B - Allen screw M8 x 15 (is screwed in from the reverse side into the counterholder -T30004 (3415)- )




– Install Haldex coupling ⇒ page 283 .
– Install propshaft at rear final drive ⇒ page 223 .
– Install exhaust system and align free of stress ⇒ Engine ⇒ Rep. Gr. 26 .
– Fill up with high efficiency oil for Haldex coupling and check oil level in the Haldex coupling ⇒ page 300 .

### Tightening torques

| Component | Nm |
|---|---|
| Flexible disk to propshaft | ⇒ page 233 |
| Propshaft to rear final drive | ⇒ page 233 |
| Haldex coupling to rear final drive | ⇒ page 283 |

## 11.4 Removing and installing the oil filter for Haldex coupling (final drive “02D/0AV”)

### Special tools and workshop equipment required

♦ Catch pan

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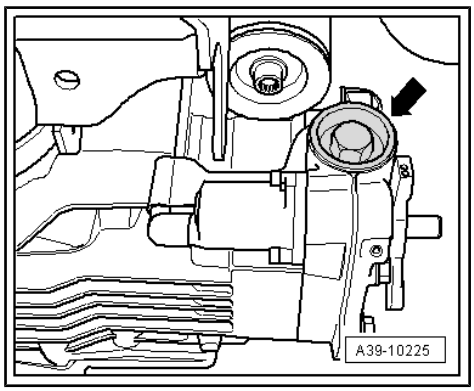
**Note**

*On vehicles with the rear final drive “OBR”, the oil filter for the Haldex coupling is not replaced.*

### Removing

– Place a catch pan under the rear final drive.
– Unscrew cap -arrow-.
– Pull out oil filter unit.

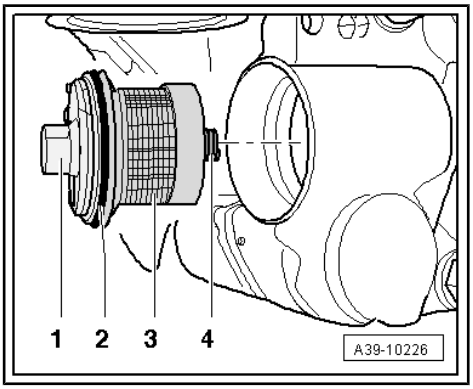


## Install

Installation is performed in the reverse order, pay attention to the following points:

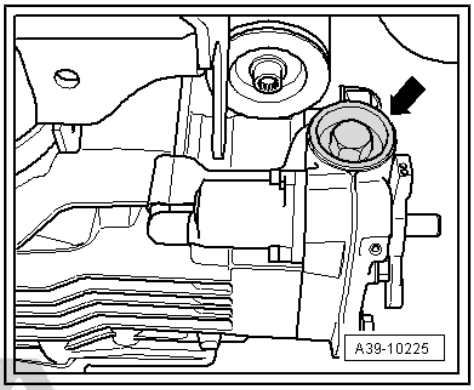
– Install O-ring -2- onto the oil filter carrier -1-.

– Insert connecting spring -4- into the oil filter -3-.




– Screw in screw cap -arrow- with a new O-ring and tighten to tightening torque ⇒ Item 6 (page 289) .

– Check oil level in the Haldex coupling ⇒ page 300

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# 12 Check oil level in the Haldex coupling or change oil or top up with oil

**Note**

- *The "Haldex coupling" is located in the rear final drive.*
- *The final drive and the "Haldex coupling" have separate oil circulation systems.*
- *The final drives "02D/0AV" are fitted with the "Haldex coupling of the 2nd generation".*
- *The final drive "0BR" is fitted with the "Haldex coupling of the 4th generation".*
- *The rear final drives "02D/0AV" and "0BR" have different "Haldex couplings" as well as different oils for the Haldex coupling.*
- *Both oils for the Haldex coupling must neither be mixed up nor mixed.*

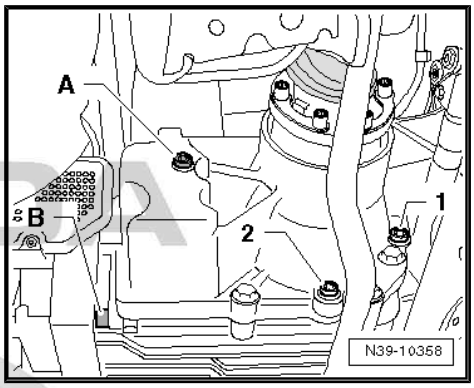
**Assignment of oil filler plugs and oil drain plugs**

A - Filler screw for high efficiency oil for Haldex coupling

B - Oil drain plug for high efficiency oil for Haldex coupling

1 - Filler screw for gearbox oil

2 - Oil drain plug for gearbox oil




## 12.1 Check oil level in the Haldex coupling

**Special tools and workshop equipment required**

- Catch pan

Oil specification ⇒ Electronic Catalogue of Original Parts .

– Measure oil temperature ⇒ Vehicle diagnosis, testing and information system VAS 5051.

The oil temperature must be between 20 and 40 °C.

The oil temperature can be increased by warming up the engine.

– Place a catch pan under the rear final drive.

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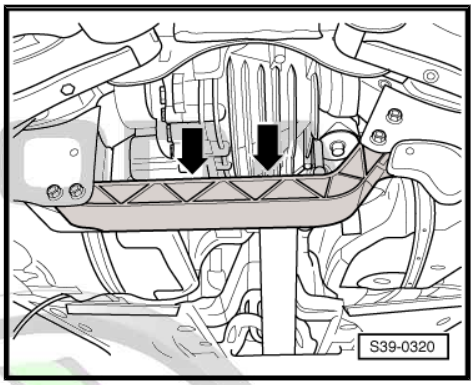
**Vehicles with aluminium assembly carrier**

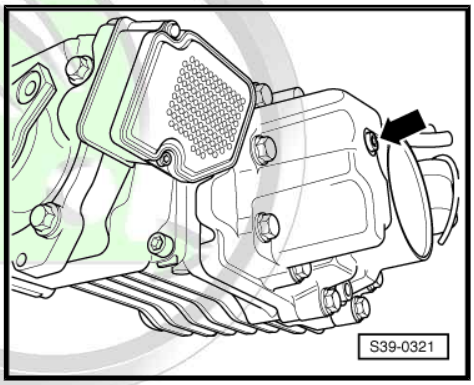
**Note**

- *Always place cloth on cross member -arrows-.*
- *If the oil gets onto the cross member or into the recesses at the cross member, it must be removed immediately.*
- *There is no cross member on vehicles with steel assembly carrier.*




**Continued for all vehicles**

– Release screw for oil inspection -arrow-. Shown on a removed final drive for purposes of clear presentation.




Oil is at the correct level if the Haldex coupling is filled up to the lower edge of the oil filler hole or at least 3 mm below the lower edge of the oil filler hole.

– Screw in screw -arrow- using a new sealing ring and tighten to 15 Nm.

## 12.2 Changing oil in the Haldex coupling

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**Special tools and workshop equipment required**

- Filling device -VAS 6291- or -VAS 6291A-
- Catch pan

Oil specification ⇒ Electronic Catalogue of Original Parts .

– Raise vehicle.

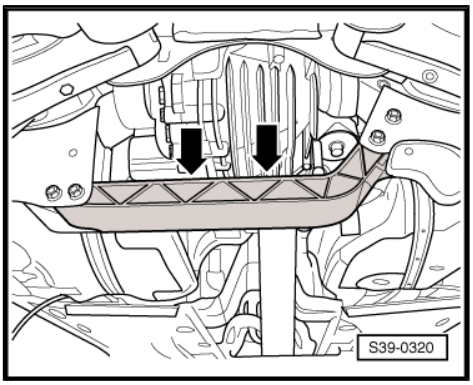
– For changing, use the filling device , e.g. -VAS 6291- or -VAS 6291A- .

– Place a catch pan under the rear final drive.

**Vehicles with aluminium assembly carrier**

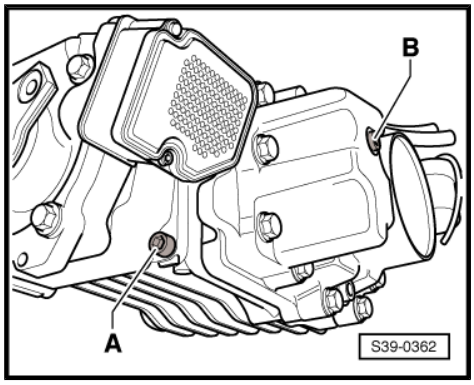
**Note**

- *Always place a cloth on the cross member -arrows-.*
- *If the oil gets onto the cross member or into the recesses at the cross member, it must be removed immediately.*
- *There is no cross member on vehicles with steel assembly carrier.*




**Continued for all vehicles**

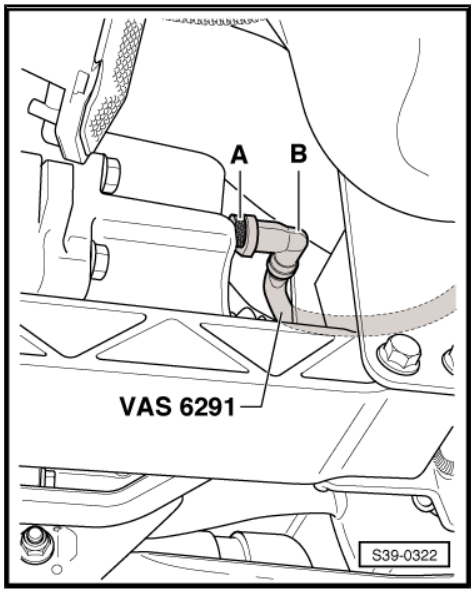
– Release screw for oil inspection -B-. (Shown on a removed final drive for purposes of clear presentation.)
– Screw out oil drain plug -A-.
– Drain oil.
– Screw in oil drain plug -A- using a new gasket ring and tighten to 30 Nm.




– Screw in adapter -A- up to the stop into the inspection hole.
– Lock angular piece -B- with adapter.
– Pull hose above the drive shaft.

The hose must not sag. It must come out above the left rear wheel.

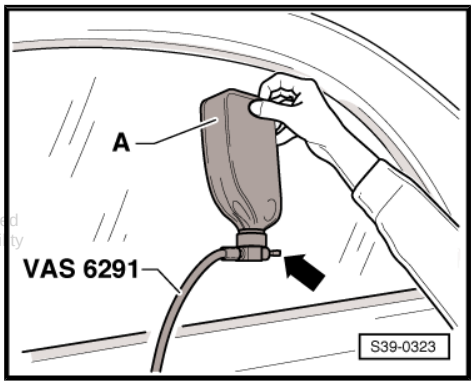
– Lower the vehicle.




– Ensure that the the valve -arrow- is closed.
– Screw oil reservoir -A- onto filling device , e.g. -VAS 6291- or -VAS 6291A- .
– Open valve -arrow- and hold oil reservoir as shown.

The Haldex coupilng is now filled with oil.

– Raise the vehicle after several minutes.

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**Note**

- *If the Haldex coupling is correctly filled, oil flows out at the adapter -A-.*
- *If no oil flows out, lower the vehicle and continue the filling procedure.*

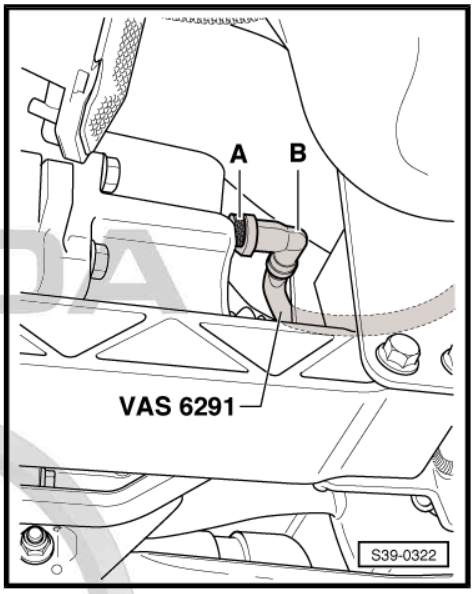
– Raise vehicle.

– If oil flows out, place oil reservoir downwards below the level of the Haldex coupling (e.g. on a tool car).

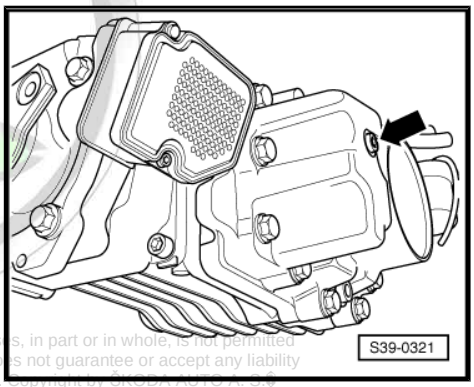
The excessive oil now flows back into the oil reservoir.

– If no more oil flows back, remove filling device .

– Check oil level in the Haldex coupling.




– Screw in screw -arrow- using a new sealing ring and tighten to 15 Nm.

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## 12.3 Refilling oil in Haldex coupling

**Special tools and workshop equipment required**

- Filling device -VAS 6291- or -VAS 6291A-
- Catch pan

Oil specification ⇒ Electronic Catalogue of Original Parts .

– Raise vehicle.

– For topping up, use filling device , e.g. -VAS 6291- or -VAS 6291A- .

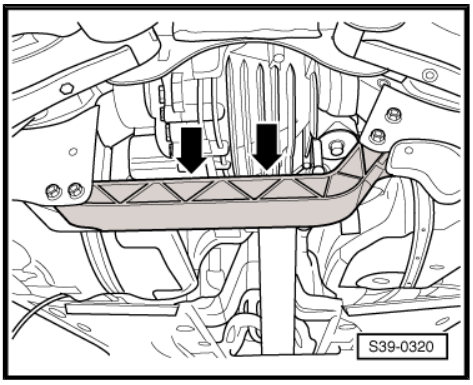
– Place a catch pan under the rear final drive.

**Vehicles with aluminium assembly carrier**

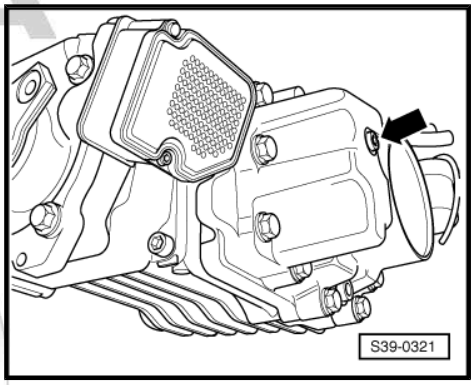
**Note**

- *Always place a cloth on the cross member -arrows-.*
- *If the oil gets onto the cross member or into the recesses at the cross member, it must be removed immediately.*
- *There is no cross member on vehicles with steel assembly carrier.*

**Continued for all vehicles**



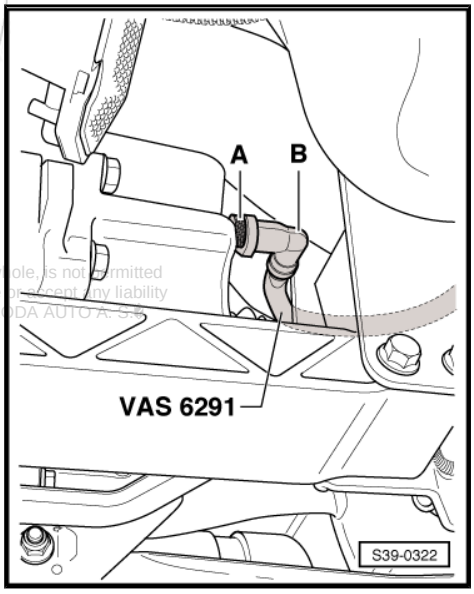
– Release screw for oil inspection -arrow-. Shown on a removed final drive for purposes of clear presentation.




– Screw in adapter -A- up to the stop into the inspection hole.
– Lock angular piece -B- with adapter.
– Pull hose above the drive shaft.

The hose must not sag. It must come out above the left rear wheel.

– Lower the vehicle.

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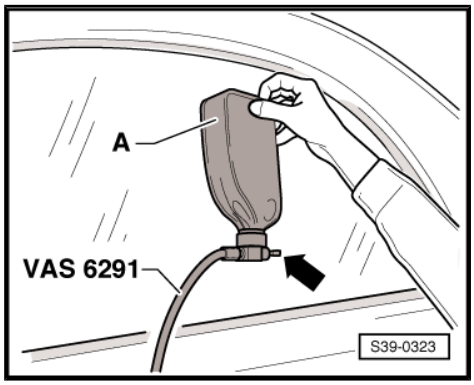
– Ensure that the the valve -arrow- is closed.
– Screw oil reservoir -A- onto filling device , e.g. -VAS 6291- or -VAS 6291A- .
– Open valve -arrow- and hold oil reservoir as shown.

The Haldex coupilng is now filled with oil.

– Raise the vehicle after several minutes.



**Note**

- *If the Haldex coupling is correctly filled, oil flows out at the adapter -A-.*
- *If no oil flows out, lower the vehicle and continue the filling procedure.*

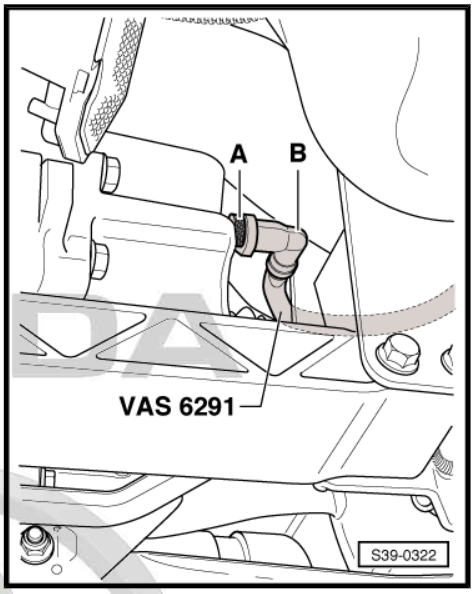
– Raise vehicle.

– If oil flows out, place oil reservoir downwards below the level of the Haldex coupling (e.g. on a tool car).

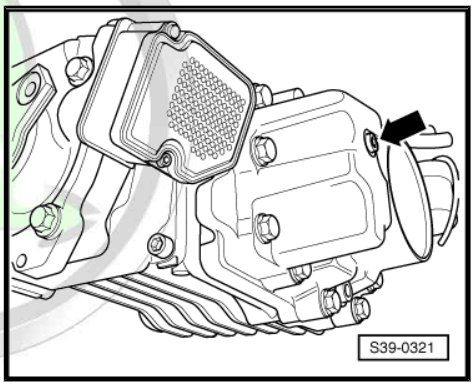
The excessive oil now flows back into the oil reservoir.

– If no more oil flows back, remove filling device .

– Check oil level in the Haldex coupling.




– Screw in screw -arrow- using a new sealing ring and tighten to 15 Nm.

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# 13 Checking the gear oil level in the rear final drive

**Note**

- *The "Haldex coupling" is located in the rear final drive.*
- *The final drive and the "Haldex coupling" have separate oil circulation systems.*

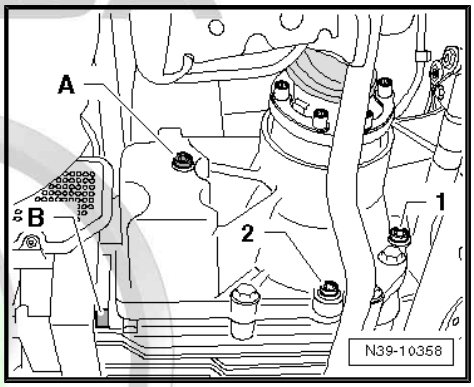
**Assignment of oil filler and oil drain plug**

A - Filler screw for high efficiency oil for Haldex coupling

B - Oil drain plug for high efficiency oil for Haldex coupling

1 - Filler screw for gearbox oil

2 - Oil drain plug for gearbox oil




## 13.1 Checking the gear oil level in the "rear final drive 02D/0AV"

**Special tools and workshop equipment required**

- Filling device -VAS 6291- or -VAS 6291A-
- Catch pan

Oil specification ⇒ Electronic Catalogue of Original Parts

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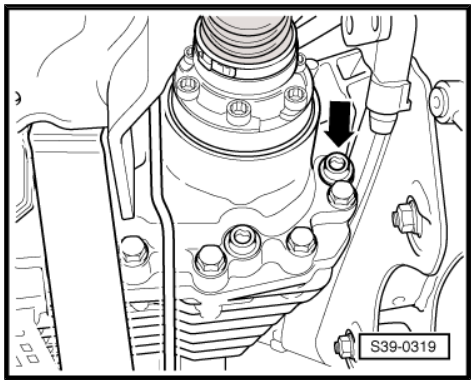
- Vehicle on level ground.

– Place a catch pan under the rear final drive.

– Unscrew screw -arrow- for oil inspection.

Oil is at the correct level if the rear final drive is filled up to the lower edge of the oil filler hole.

– Insert screw -arrow- and tighten to tightening torque.




**If re-filling, do the following:**

– Unscrew screw -arrow- for oil inspection.

– Pour in axle oil up to lower edge of filler hole.

– Insert screw -arrow- and tighten to tightening torque.

**Tightening torque**

| Component | Nm |
|---|---|
| Oil check screw M 10 | 15 |
| Oil check screw M 20 | 40 |

## 13.2 Checking the gear oil level in the “rear final drive 0BR”

**Special tools and workshop equipment required**

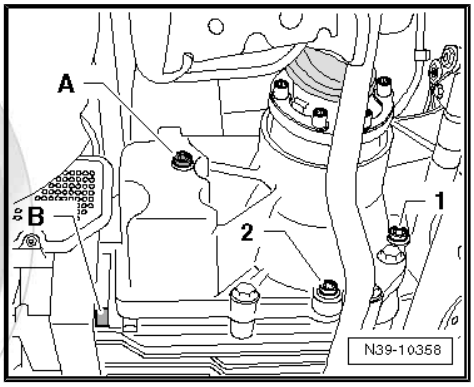
- Filling device -VAS 6291- or -VAS 6291A-
- Catch pan

Oil specification ⇒ Electronic Catalogue of Original Parts .

- Vehicle on level ground.

– Place a catch pan under the rear final drive.

– Unscrew screw -1- for oil inspection.




**Note**

*Do not unscrew the screws -2- (oil drain plug for rear final drive), -A- (oil filler plug for Haldex coupling) and -B- (oil drain plug for Haldex coupling).*

Oil is at the correct level if the rear final drive is filled up to the lower edge of the oil filler hole.

– Screw in new screw -1- and tighten to 15 Nm

**If re-filling, do the following:**

– Unscrew screw -1- for oil inspection.

– Pour in gear oil up to lower edge of filler hole.

– Screw in new screw -1- and tighten to 15 Nm

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# 14 Inspect operation of Haldex coupling

“Final drive 02D/0AV” - Functional test for opened Haldex coupling on vehicles fitted with manual gearbox ⇒ page 308 .

“Final drive 02D/0AV” - Functional test for closed Haldex coupling on vehicles fitted with manual gearbox ⇒ page 309 .

“Final drive 0BR” - Functional test of Haldex coupling with manual gearbox ⇒ page 309 .

Before repairing the Haldex coupling, try to determine the origin of the damage as accurately as possible using the ⇒ Vehicle diagnosis, testing and information system VAS 5051 in the functions “Targeted fault finding”, “Vehicle self-diagnosis” and “Measuring method”.

## 14.1 “Final drive 02D/0AV” - Functional test for opened Haldex coupling on vehicles fitted with manual gearbox

**Test requirements:**

- Oil level of the Haldex coupling is O.K.
- Check oil level in the Haldex coupling ⇒ page 300
- Correctly fitted engine control unit and ABS control unit (check coding and control unit identification number)

– Raise vehicle ⇒ Maintenance ; Octavia II .

**Note**

*For safety reasons, the vehicle must be placed on the lifting platform in such a way that the wheels have no contact with the ground. Proceed carefully when inspecting.*

– Actuate clutch pedal.

– Start engine.

– Engage 1st gear and drive off slowly.

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**Now all 4 wheels must turn.**

– Apply handbrake.

**The rear wheels must come to a standstill, while the front wheels continue to turn.**

- If the rear wheels do not turn:

The Haldex coupling is open, the function is O.K.

- If the rear wheels turn:

The Haldex coupling is closed. Possible cause of fault:

- Main pressure regulating valve can clamp.
- Mechanical fault of the Haldex coupling.
- Four-wheel drive control unit -J492- on rear final drive is defective.
- Handbrake warning switch -F9- is defective.

## 14.2 “Final drive 02D/0AV” - Functional test for closed Haldex coupling on vehicles fitted with manual gearbox

**Test requirements:**

- ♦ Oil level of the Haldex coupling is O.K.
- ♦ Check oil level in the Haldex coupling ⇒ page 300
- ♦ Correctly fitted engine control unit and ABS control unit (check coding and control unit identification number)

– Raise vehicle ⇒ Maintenance ; Octavia II .

**Note**

*For safety reasons, the vehicle must be placed on the lifting platform in such a way that the wheels have no contact with the ground. Proceed carefully when inspecting.*

– Actuate clutch pedal.

– Start engine.

– Engage 2nd gear.

– Pull on the handbrake and slowly depress the clutch.

**The engine must now stall.**

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- If the engine has stalled:

The Haldex coupling is closed, the function is O.K.

- If the engine has not stalled:

The Haldex coupling is open. Possible cause of fault:

- ♦ Main pressure regulating valve can clamp.
- ♦ Mechanical fault of the Haldex coupling.
- ♦ Four-wheel drive control unit -J492- on rear final drive is defective.

## 14.3 “Final drive 0BR” - Functional test of Haldex coupling with manual gearbox

**Special tools and workshop equipment required**

- ♦ Vehicle diagnosis, measurement and information system -VAS 5051B- or vehicle diagnosis, measurement and information system -VAS 5052-

Before repairing the Haldex coupling, try to determine the origin of the damage as accurately as possible using the ⇒ Vehicle diagnosis, testing and information system VAS 5051 in the functions “Targeted fault finding”, “Vehicle self-diagnosis” and “Measuring method”.

**Note**

- *The Haldex coupling is tested on the lift platform using the vehicle diagnosis, measurement and information system -VAS 5051B- or with the vehicle diagnosis, measurement and information system -VAS 5052- .*
- *For safety reasons, the vehicle must be placed on the lifting platform in such a way that the wheels have no contact with the ground. Proceed carefully when inspecting.*

**Functional test**

**WARNING**

- ***Only the vehicle diagnosis, measurement and information system -VAS 5051 B- or the vehicle diagnosis, measurement and information system -VAS 5052- must be used to read the measured value blocks.***

– When the ignition is switched off, connect the vehicle diagnosis, measurement and information system -VAS 5051B- or the vehicle diagnosis, measurement and information system -VAS 5052- to the diagnostic connection.

Fitting location: Cover in driver's footwell.

– Raise vehicle ⇒ Maintenance ; Octavia II .

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– Select “chassis” on the display.
– Select “four-wheel drive with Haldex coupling (4th generation)” on the display.
– Select “01 - self-diagnosable system” on the display.
– Select “functions” on the display.
– Select “final control diagnosis” on the display.
– Follow the instructions on the tester.
– Select “functional test for Haldex coupling” on the display.
– Follow the instructions on the tester.